The NEW ZEALAND JOURNAL OF AGRICULTURE

Vol. 64. WELLINGTON, JUNE 15, 1942. No. 6

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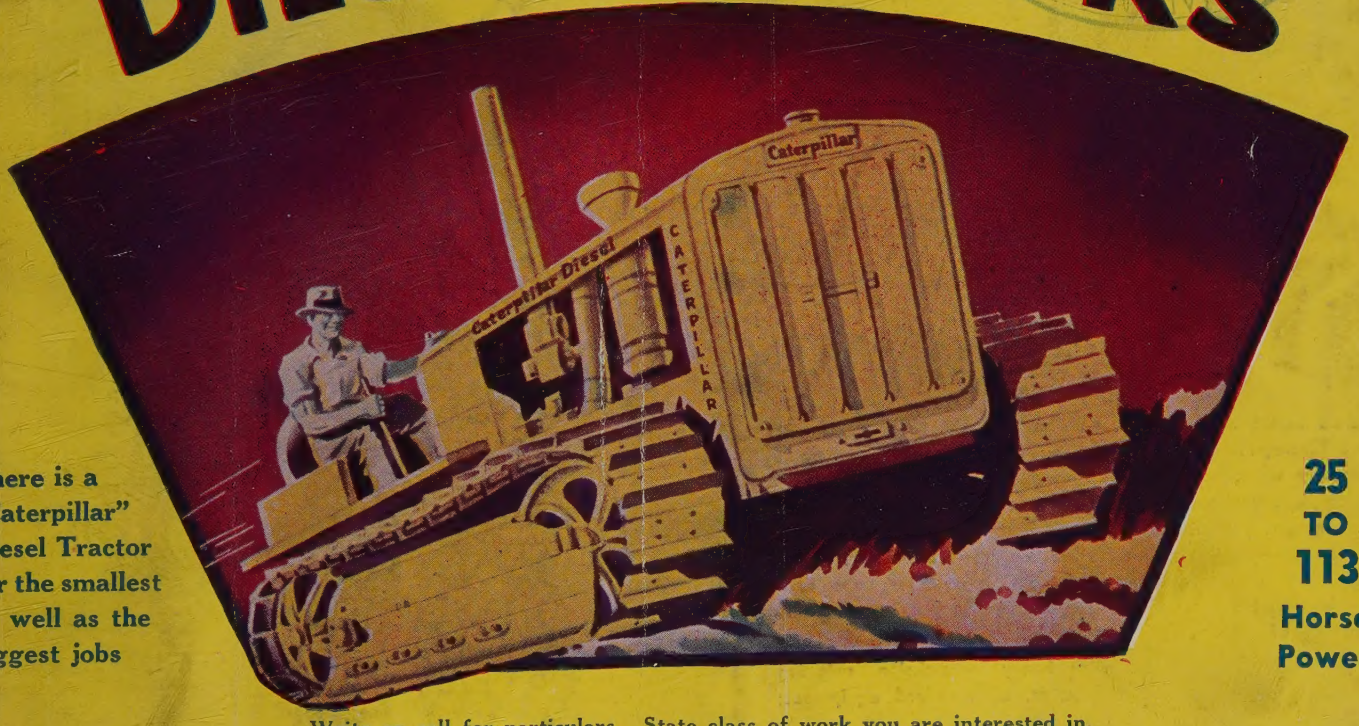

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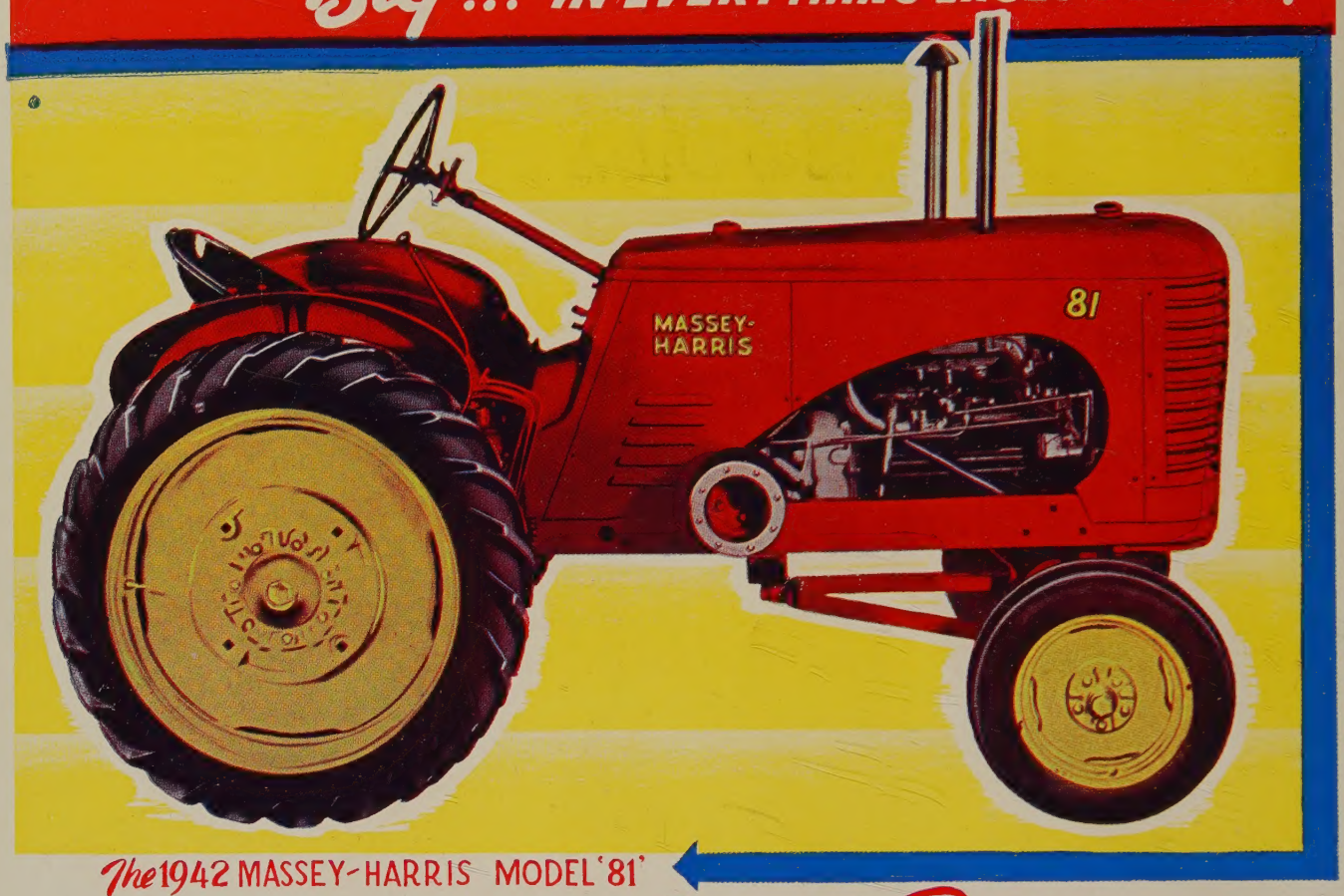

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High Compression Motor, extra heavy transmission, swinging drawbar, turning brakes, self-starter, all standard equipment; so before making any tractor investment why not make a point of getting the down-to-earth facts about this new headliner by sending to our Head Office, Christchurch, for free new Colour Catalogue.

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THE NEW ZEALAND
JOURNAL OF AGRICULTURE

Vol. 64. No. 6.
June 15, 1942.
Wellington.

Published by direction of Hon. J. G. Barclay, Minister of Agriculture.

The care and conservation of rubberware for milking machines is absolutely imperative if the dairy industry of the Dominion is to function on its present basis. The temporary loss of the Malayan Peninsula and other Allied possessions in the East has deprived us of our main sources of supply, and existing stocks must be made to last as long as possible. This can be achieved if the directions in this article are conscientiously followed.

Conservation of Rubberware

DURING the year ending 31st January, 1940, eighty-four per cent. of the cows in milk in the Dominion, numbering 1,445,756, were milked by machine and it is probably correct to say that New Zealand, more than any other dairying country, is vitally interested in the supply of rubber for this purpose.

It has been stated that eighty-five per cent. of the rubber used in the world was produced in countries now in enemy hands, leaving only fifteen per cent. to supply the needs of all industries outside that area.

Taking these two facts into consideration, it is obvious that very definite steps must be taken to conserve stocks of raw rubber and to make the best use of the manufactured rubberware which is available.

The information given below has been gathered from the manufacturers of rubberware and milking machines and from officers of the Department of Agriculture. You are earnestly requested to study it and follow the suggestions made as the prospects of replacing present stocks are very doubtful and without it the production of dairy produce must be very seriously reduced.

The amount of raw rubber which will be available for the manufacture of milking machine rubberware in the coming season will be fifty per cent. of last year's consumption. Consequently, it behoves all milking machine owners to make the best use of the supplies which are made available, to care for it so that its life will be prolonged as much as possible, and to continue to use it for as long as it is economically sound to do so.

Cleaning Rubberware

Rubberware of first-grade quality is the best and cheapest to use. Tubing and inflations, when new, possess a very smooth inside surface, and this condition can be maintained for a long period, provided the method of cleaning is properly carried out. Spiral brushes or metal scrapers should not be used for cleaning the inner surface of rubber tubing, as they cause scoring and roughening of the surface, which creates lodging places for deposits of milk and germs, with disastrous results both to the rubber and the quality of the milk. Fat and grease are the greatest enemies of rubber and deposits of such will very quickly cause the inside surface to perish, leaving cracks and holes in which the milk lodges and putrefies. The effect on the rubber is to cause it to become soft and spongy. In other words, an inflation or tube which is coated with fat, grease or milk is in the best condition to decay rapidly and will have a short life.

The boiling water and caustic soda method of cleaning will promote a smooth, hard inner surface which is hygienic and easily cleaned, and the life of the rubberware will be materially lengthened. It is carried out as follows:—

Immediately after milking rinse with cold or luke warm water. Follow with boiling water containing 1 teaspoonful of caustic soda to 4 gallons. Finish with pure boiling water. The use of excessive quantities of caustic soda

FARMERS! We Must Stretch Our Resources . . .

Carefully store all old rubber and await further advice from your local Reclamation Board.

SAVE

EVERY SCRAP OF

OLD RUBBER

Don't destroy a single piece of old or worn rubber in any shape or form. It is vitally needed for reclaiming.

HERE ARE ARTICLES THAT CAN BE SAVED—

Crepe soled shoes.
Inner tubes of car tyres (leave in valves).
Inner tubes of bicycle tyres (leave in valves).
Hot water bottles (leave in stoppers).
Rubber gloves.
Football bladders.
Milking machine inflations and tubing.
Rubber tubings.
Bathing caps.
Motor car tyres.
Cycle tyres.
Rubber mats.
Gum boots.
Goloshes.
Rubber soled shoes.

Remember this, Mr. Farmer—any old rubber burnt or thrown away is a blow to the country's resources. Your help is needed!

WASTE NOT! WANT NOT!

The Army moves on Rubber! The Air Force needs Rubber! The Navy needs Rubber! Industry needs Rubber! They ALL need your help and support!

This advertisement is inserted in the National interest by:

MARATHON RUBBER FOOTWEAR LTD., CHRISTCHURCH.
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Reclaimed Rubber is Needed for War Industries!

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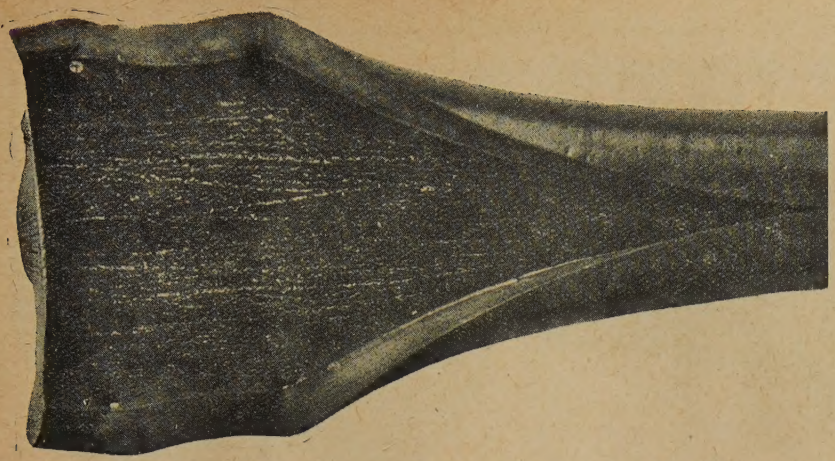
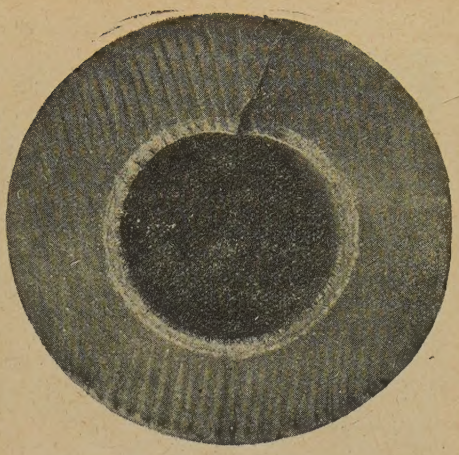


Long milk-rubber after twelve months' use and cleaning daily with boiling water, washing-soda, and the use of a brush and scraper. Note the scored inner surface of the tube.



End view of the same rubber. The whitish inner circle indicates the scored surface of the tube.

will be harmful to rubber. Do not exceed the amount stated.

Do not use super-heated steam to sterilise rubberware. Low pressure steam will do no harm. Remember that wet rubber cuts easily. Handle it carefully during milking and take even greater care when washing the milking plant.

Conditions Affecting the Life of Rubber

1. **Light:** Exposure to light speeds up oxidation (perishing) and reduces the life of rubber.

2. **Tension:** Rubber under strain ages more quickly than unstrained rubber.

3. **Bending or flexing:** Bending or flexing is a direct cause of cracks.

4. **Oxidation:** The oxygen of the air is the general cause of ageing. Its effects are accelerated by—

(a) Heat: Rubber should be kept in a cool atmosphere when not in use.

(b) Certain metals, e.g., copper. Do not allow rubber to come into contact with untinned metals.

(c) Light (see 1).

Avoid corrosive (oxidising) chemicals, such as chlorine.

5. **Fats and greases:** Rubber should be kept free from fatty, greasy substances, butterfat, teat salves, etc., which reduce its tensile strength.

Methods of Extending the Life of Inflations and Tubes

(a) Thoroughly cleanse the interior and exterior of all rubberware after each milking to ensure the removal of fat and other foreign matter.

(b) The use of taps on the pulsator down droppers which are turned

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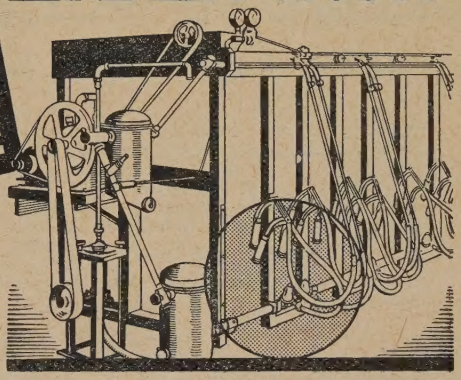

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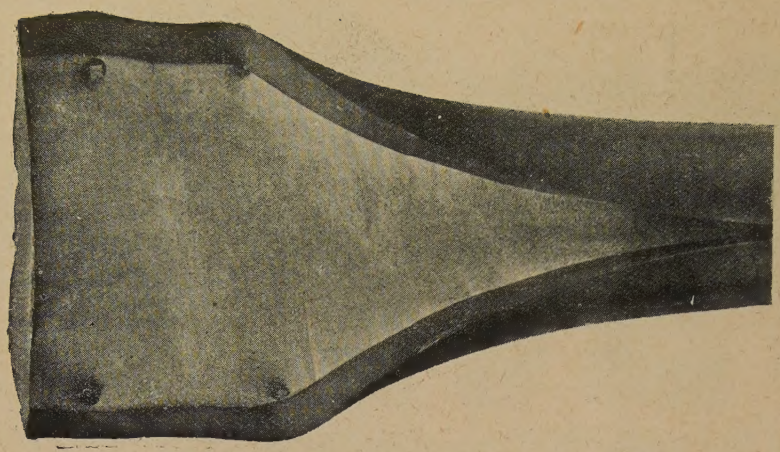
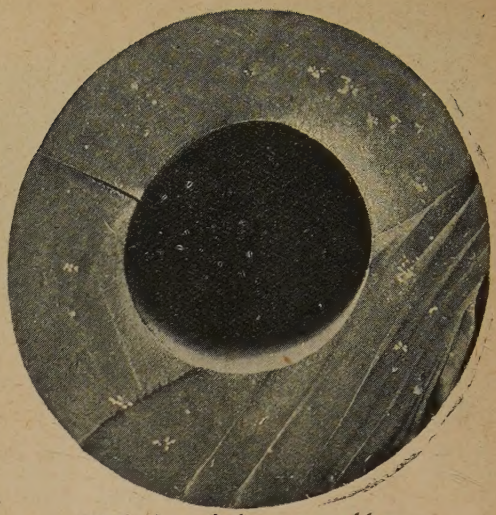


Long milk-rubber after two seasons' use and cleaning daily by the boiling-water and caustic-soda method.



End view of the same rubber.

off when cups are not milking will help to extend the life of inflations.

(c) Do not smear grease or vaseline round the lips of the inflations. Teat salves should only be used **after** milking.

(d) Do not use cleansers containing chlorine in any form (see above).

(e) Soft inflations will last longer if the tension is released when not in use.

(f) During the off season cups should be dismantled and tubes removed from nipples. Gripping them close to the nipples to avoid stretching. This avoids the destructive effects of copper in brass fittings which accelerates deterioration.

(g) When not in use, keep cups and tubes in a cool, dark place. Do not

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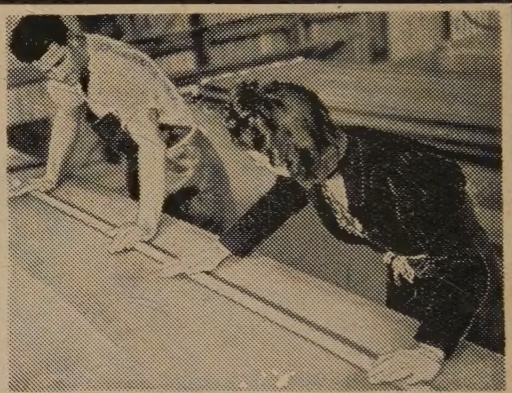
to ensure FINE FINISH and UNIFORMITY

In every industry there are certain things which **MUST** be done by hand . . . skilled work which no machine will ever master. In the making of the famous Barnet Glass Inflations the wrapping of the Inflations by hand (as shown at right) is a highly skilled process essential to fine finish and absolute uniformity. New Zealand's most modern factory is to-day coping with the ever-increasing demand for these wonderful milkers. They're popular because they give quick release; because they give longer service; and because they keep their shape better. On sale everywhere—yes, at **YOUR** distributor!



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If your nearest distributor cannot supply you with the Barnet Glass Inflations, please forward us his name and address and we will see that your requirements are promptly attended to.

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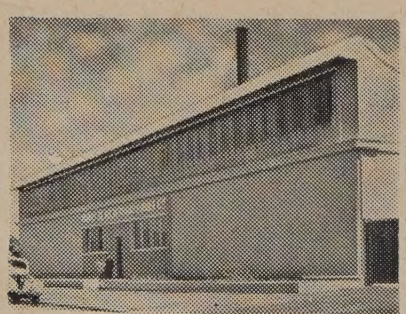

Factory: Junction St., Christchurch.

Barnet Glass
TESTED INFLATIONS

Sales Office: 196 Hereford St., Christchurch. Factory: Junction St., Christchurch.

hang cups and tubes in the sun. Lay the latter straight out on a flat surface with a fall to one end.

Points of Paramount Importance

1. "Doubled-up" plants should not be used. Such machines use almost double the normal amount of rubber.

2. The following are desirable points in teat cups:—

(a) Rubber tops should be protected by the metal of the cup from contact with the concrete floor if the cups fall.

(b) Rounded, smooth, well tinned rings, plugs and nipples should be used to avoid wear ot the rubber when it is gripped. Inflation nipples should not be screwed up hard.

(c) Cups which have provision for easy, rapid tightening and slackening of the inflation will give longer life to the latter.

3. When air tubes crack at the ends, the latter may be cut off, extra length being given to the tube by inserting a short piece of metal tubing in the middle of the rubber tube.

4. Metal, which comes in contact with rubber, must be well tinned and have no sharp edges.

5. Machines should be operated at as low a vacuum as is practical.

6. Dual vacuum machines with a high vacuum behind the inflation will reduce the life of the inflation.

7. Pulsators should not be run at more than 40-42 pulsations per minute.

8. When in use, inflations should be carefully tightened, slackening being effected as soon as milking is finished.

9. Completely dismantle the inflation from the cup once weekly. Carefully wash and dry and reassemble just before the next milking.

10. The bruising, twisting, or bending of rubber tubes shortens their lives; avoid such treatment.

REMEMBER—the chief enemies of rubber are Fat or Grease, Light, Heat, Bending, Tension, Knocks, and Abrasions. Rubber should be kept cool, out of the light, and not stretched or kinked in any way.

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Because cows stand more naturally without them.

We told you last month that bail-chains and stripping buckets were unnecessary. Why?

Because a cow comes to be milked and not to be played with.

By eliminating stripping and adopting the correct shed technique mentioned above, farmers will find it unnecessary to reduce their herds. Soon we shall be asked to increase production: why, then, because of labour problems, reduce your herd now, when the G.V.B. is available to overcome present difficulties?

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COMBATTING DISTEMPER IN DOGS

H. W. CARBURY, Veterinarian, Auckland.

This article on the treatment of distemper in dogs has been written as the result of an inquiry by a farmer. Great importance is attached to the carrying out of all treatment in detail, as half measures are useless.

RECENTLY I was asked the following questions by a sheep farmer at Toa Toa:—

1. What is a dog's normal temperature? How does the temperature vary in the case of distemper or "flu," etc.? Would it be possible to take a dog's temperature with an ordinary clinical thermometer, and what would be the best way to do this?

2. How do dogs catch the disease? Are they very likely to catch it by smelling the ground or bushes where sick dogs have been? In the case of a sick dog, to what extent does it need to be isolated?

3. Are dogs that have had distemper of any sort likely to get it again, and, if immune themselves, could they act as carriers?

4. What is the usual course of the disease, e.g., how long does it take to develop after contact with a sick dog? For how long should a dog be isolated after the acute stage has past?

5. What could be done to prevent the disease? I have heard about inoculation. Would this be practicable, and what would it cost? How could one go about getting this done?

6. Are distemper and "flu" the same disease, and if different, what would be the difference in treatment?

7. What sort and brand of medicine could you advise, and what form of tonic could be given dogs, especially when they are over the acute fever?

I replied as follows:—

The most satisfactory way of preventing distemper in ordinary circumstances is by vaccination. However, under the conditions you describe this could not safely be carried out unless you were absolutely certain that the dogs were not affected at the time of vaccination and would not be exposed to any infection for a period of at least a week following same. An alternative course to follow would be the use of anti-distemper serum. An injection of this preparation will give a dog immediate protection, but this will last for 14 days only. During this period, if the animal is exposed to infection (allowed to mix with other dogs affected with the disease) a natural and active immunity to the disease will develop, but not with the same certainty as in the vaccination method.

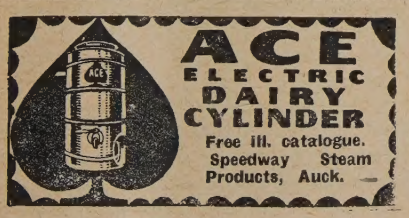
Fully-qualified veterinary surgeons are the only persons allowed to use distemper vaccine; the serum, however, can be obtained for general use. The approximate cost of vaccination is about £1 per dog, not including travelling expenses; this, however, would be a matter between yourself and the nearest qualified veterinary surgeon.

Owing to the poor keeping qualities of this vaccine, a supply is not kept in New Zealand; it is consequently necessary to order well beforehand to allow of its arrival from Australia by the time required.

The following information regarding distemper will, I trust, answer your queries and be some assistance to you:—

Nature of Disease

by a process of filtration. This virus diseases; that is, it is due to an organism so small that it cannot be seen by the highest-powered microscope, its presence being proved, however, by a process of filtration. This virus



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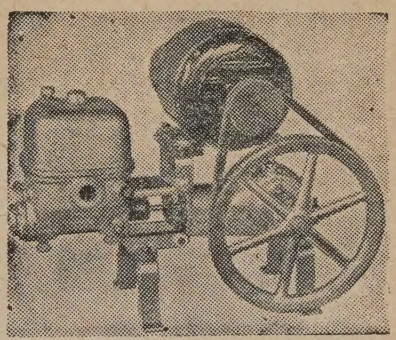

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attacks the affected animal, and is the cause of the primary symptoms and also the sequelae. The various complications that may develop during the course of distemper are the result of this primary virus infection lowering the animal's resistance and allowing organisms, which under normal conditions are harmless, to invade the tissues producing what are generally called the different types of this disease.

During the autumn, winter, and spring months, distemper increases in its intensity both as regards the number of animals affected and also the undesirable sequelae—this is due no doubt to the greater variation in temperature to which animals are subjected at these periods.

Infection is spread most commonly by direct contact with an infected animal; almost as potent, however, is mediate or indirect contact, accomplished through the agency of contaminated kennels, baskets, rugs, clothing, brushes, leads and collars, sponges, feeding utensils, spoons, thermometers, human agency and clothes; or, in fact, any article whatsoever which, having been in the immediate proximity of a distempered dog, becomes a source of great danger to the healthy.

It is the discharges, both from the eyes and the nose, but particularly from the nose, and the coughed-up sputum, which are so infective. Especially is this the case in the early stages of the disease, and when they become smeared in even the most minute quantity upon the ground or on such objects as are mentioned above, they are likely to be conveyed over wide areas and become the invisible means of spreading the contagion to innumerable animals. Therefore, prompt and efficient measures for disinfection of inanimate objects, and the strict isolation of infected animals, must be adopted.

The Symptoms

The greatest cause of unsatisfactory results in the treatment of this disease is the present-day difficulty in recognising it in the early stages. In the old-fashioned or so-called "open distemper" where the animal's nostrils and eyes were filled with matter and the general condition of malaise was evident even to those with little knowledge of dog ailments, this difficulty was to a great extent eliminated. Nowadays, however, such definite symptoms are not frequently seen, the

condition known as suppressed distemper being the most commonly encountered. The time between infection and the first noticeable symptoms is about one week.

Regarding symptoms, only **one** or a number of the following may be exhibited, and these in varying degrees. (The fact that only **one** symptom may be shown must be emphasised.) There may be a loss of appetite, increased desire for sleep and warmth, shivering, staring coat, unusual lassitude, sometimes bad temper, a hot, dry nose. Occasionally the animal remains bright and apparently normal, the only symptoms shown being a slight cough or efforts on the part of the dog to dislodge an imaginary obstruction from its throat. A watery discharge may appear from both eyes or a small bead of matter may be present at the inner corner of the eyelids the first thing in the morning. The eyes show an excessive sensitivity to light. Constipation is usually present, followed later by diarrhoea; there is a rise in temperature up to 104-105 degrees, or even higher, the most common being 102.5. Following this initial rise to 104-105 degrees for the first day or two, the temperature sometimes falls for a corresponding period to almost normal, to be followed again by a rise until the disease has run its course. This point is worth remembering, as a temperature taken during the third or fourth day may not indicate any rise and thus be misleading.

The normal temperature of the dog is 101.3, and is taken by inserting the ordinary clinical thermometer into the rectum for a period of 1½ to 2 minutes. Dogs are not affected with "flu," consequently the question of differentiation of symptoms does not arise.

As the disease progresses there is a rapid loss in condition, accompanied by a characteristic body odour and complicating symptoms may develop at any time, such as bronchitis, pneumonia, pleurisy, gastritis, enteritis, peritonitis, eye or skin lesions, jaundice, and inflammation of the urinary tract. The common sequelae are chorea, paralysis, and less frequently loss of hearing, scent, or voice.

Be On Guard

It is not at all uncommon for a dog owner to state that his dog has a slight cold or a very mild attack of distemper. Neither of these cases should be neglected in any way, as it is unusual for dogs to develop colds, and it is quite impossible to forecast what way a distemper case may develop. Owing to one of the sequelae —chorea—being incurable, and the other, paralysis, taxing the owner's nursing capabilities to their fullest extent, it is a sound policy to treat any suspicious symptoms as being distemper until their nature is definitely known.

The opinion is frequently expressed that a dog is too old to develop distemper; this to a certain extent is true, as this disease is most commonly met with in puppies from six weeks to nine months old; sometimes even in puppies two weeks old, but cases have also been recorded in very old dogs. The mortality is more severe in extreme youth and old age. Another opinion which may be misleading is that a dog once recovered will not again develop distemper. In rare instances two and even three attacks have been observed in the same dog, and death has been known to supervene on the second or third illness. It is, however, fortunately true that in the great majority of cases one

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-says the Farmer
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attack confers an active resistance to future infection.

With ordinary nursing uncomplicated distemper takes from two to four weeks to run its course. During this time careful nursing and attention to diet and body cleanliness is of the utmost importance.

New Treatment

Regarding medicinal treatment, two preparations of comparatively recent discovery have proved of the utmost efficiency in the treatment of this disease. They are (a) sulphanilamide, (b) sulphapyridine.

Both of these preparations have proved their worth. The dosage of both these preparations is the same. Owing to restrictions on the sale of the preparations at present, a prescription from a qualified veterinary surgeon or a medical practitioner is necessary to obtain the medicine.

In the case of animals in the early stages of the disease the following dosage is advised; animals noticed later will, of course, require a longer treatment:—

For cattle dogs, 3-4 tablets (7½ grains each) should be given three times daily at regular intervals for four days. One day free of medicine should then be followed by two to three days on one tablet less than previously given, another day free of medicine is then advised, to be followed in the same manner as previously, giving one tablet a day less.

If distemper ante-serum is used in conjunction with this treatment, a larger proportion of satisfactory results will be obtained.

In the treatment of this disease one thing is absolutely essential—a comfortable bed. To make this, an upturned packing case of ample size is required. This should be firmly packed to the top with clean, sweet hay. In the centre of the hay and as near to the bottom of the box as convenient, a bed or nest should be made for the patient. The bed can be kept on an open verandah (provided it is protected from rain) or in a washhouse with doors and windows open. This bed should be kept clean and changed once weekly. Three times daily the patient should be taken out of bed for feeding, grooming, and hygienic reasons. The remainder of the time—from two to four weeks—the patient should remain in bed and be as little interfered with as possible. Clean, cold water should be available at all times. Distemper, being a disease affecting the nervous system, the more sleep and fresh air the patient receives the better will be the result.

It is not unusual after two or three days in bed for the patient to apparently show a complete recovery. The owner, feeling that a mistake has been made in diagnosis or that the patient has completely thrown off the infection, allows the animal its freedom, usually with the result that unfavourable symptoms develop later. Until the temperature remains normal for a week, no risks should be taken.

Feeding

As regards feeding, the dog may be given raw or cooked mince, fish (boiled), rabbit (without bones), and milk. If a meal is refused it should not again be offered. All feeding utensils should be scrupulously cleaned daily with boiling water—no disinfectant should be used. Discharges from the eyes and nose should be removed as soon as formed, and if the mouth is offensive, washing frequently with warm salty water (one teaspoonful to the pint) will considerably add to the patient's comfort. If necessary liquid paraffin in doses of a teaspoonful to a tablespoonful may be given twice weekly to eliminate any possibility of constipation.

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When a patient has recovered from distemper, a period of one month's convalescence is necessary, during which time the dog should not be subjected to any excitements, fatigue, or sudden changes in temperature, and should be fed well and groomed well daily. During convalescence tonic pills of citrate of iron and quinine, five grains each, three times daily, are beneficial.

The two most common sequelae following distemper are:—(1) Chorea, a convulsive involuntary twitching of the muscles, and (2) paralysis, partial or complete, affecting the hindquarters.

As far as chorea is concerned, no treatment has proved effective for this very unpleasant condition. Cases, however, are recorded as having recovered after a period of some years. Although it most commonly affects the muscles of the head and jaws, it may spread to any part of the body. In some cases an animal may have at one and the same time chorea affecting the head and paralysis the hindquarters. This trouble does not develop earlier than three weeks from the time of infection.

Regarding paralysis, the majority of animals affected can be cured provided suitable treatment is available, although their former freedom of action may be somewhat restricted or altered. Treatment can be classified under two headings:—(1) Nursing, (2) Electric treatment.

Nursing

Nursing at this stage requires much more attention than when the patient was actually suffering from the disease itself. Owing to the frequent loss of control of the bowel and bladder, the tendency to bed sores and the presence of flies, unremitting attention is an absolute necessity, and unless this is assured it is not advisable to consider treatment at all. A bed should be provided similar to that already described; the floor of the box should, however, have three or four inches of sawdust and a similar thickness of wood wool on top of this. Such an arrangement will help considerably in not only keeping the animal's bed clean but in reducing the soiling of the coat and scalding of the skin. A light muslin cover over the top of the box will prevent the fly nuisance. The dog should be turned every three hours, given a good brushing at the same time, and the affected legs passively moved and massaged. The feeding should be on the same lines as previously mentioned. No purgative medicine should be used; liquid paraffin twice weekly will prevent constipation.

It is very important during the whole period of treatment that the patient is kept free from the attention of flies and lice; a good insecticide dusting powder will give satisfactory results. As no baths are allowed during the course of the convalescent stages of this disease, the body and coat may be cleaned by using a "bran bath." This is given as follows:—Bran, well dried in an oven, is rubbed into the skin and coat and then brushed out again. This has marked cleansing properties.

Disinfectants

At no time should strong-smelling disinfectants be used in or about the location of the sick animal, as they will act as irritants to already supersensitive membranes, will make the patient restless, and in many cases interfere with the appetite.

Some animals will slowly recover the use of their legs after a variable convalescent period; recovery, however, is greatly expedited by suitable electric treatment. Faradic, high-frequency, and sinusoidal treatments are all beneficial provided they are not given until the animal is well on the road to recovery in general health.

In conclusion, the following points deserve special attention:—

1. The treatment of all suspicious cases as distemper until a definite opinion can be formed.

2. The absolute necessity of a suitable bed, quietness, and fresh air.

3. The prevention of all exercise until convalescence is well advanced.

4. The carrying out in detail of all treatment — nursing, feeding, and hygienic. Half-measures are useless.

5. The contra indication of strong-smelling disinfectants.

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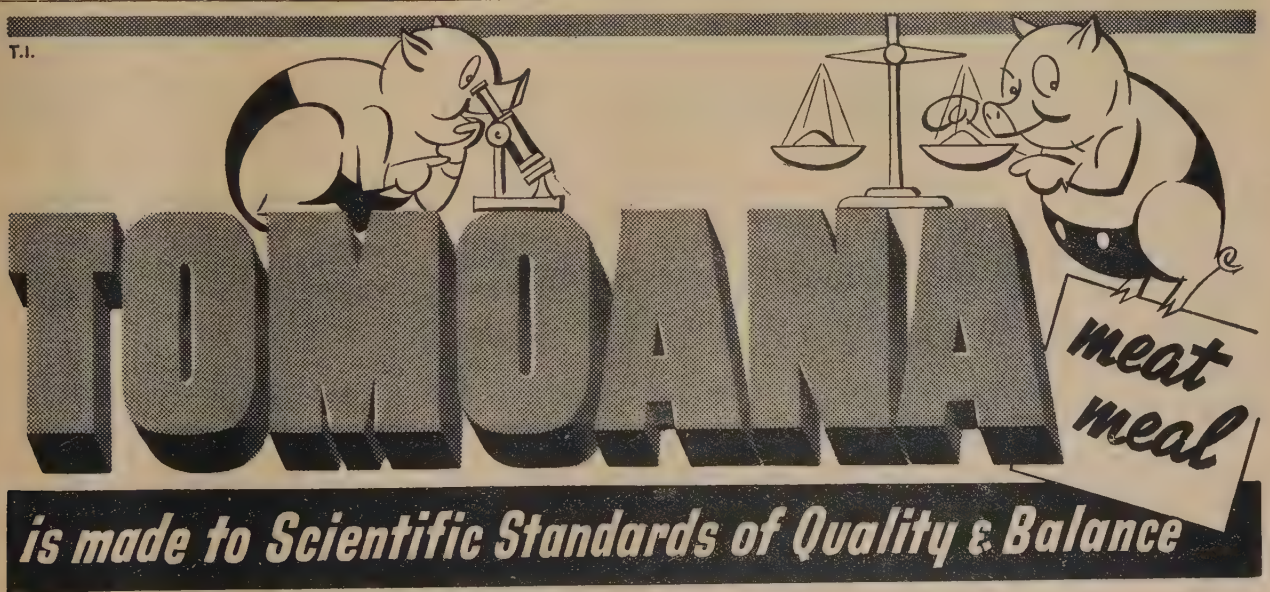

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This article continues and concludes the survey of the investigation carried out by the Fields Division, and further describes the important practical results which emerge from this work. This month's instalment deals mainly with annual crops, and should be a guide to farmers in various parts of the Dominion.

Field Investigational Work

(*Continued*)

(4) Field Crop Investigations

The early work on annual crops undoubtedly supplied useful information regarding the value of crops throughout the districts concerned, but no really accurate comparisons were secured until the system he had inaugurated in Canterbury was generally planned for all cropping districts by Mr. Hudson on assuming office as Field Crop Experimentalist. This technique introduced the sowing of replicated treatments with a seven-coulter Department drill and the harvesting of each plot separately to enable the results to be statistically examined. In the case of cereal crops, the sheaves from each plot were stooked and later threshed separately in the small Department mill, which was transported to the various trials throughout the territory. In root crop trials, germination and, where necessary, disease counts were taken, and these figures were used in conjunction with yield data secured later.

By R. B. TENNENT,
Director of the Fields Division, Wellington.

Clerical assistants engaged in a statistical examination of experimental results. The records are shown in the background.

Wheat Trials

(a) Wheat variety and manurial trials, started as a Departmental project to investigate the values of various introduced varieties and manurial treatments, later became a collaborative activity after the formation of the Wheat Research Institute. Intimate contact with all wheat-growing problems is maintained through the Wheat Specialists' Committee, and consequently the investigational work in connection with this crop is planned on sound lines, and provides valuable information in regard to yield and baking quality, applicable in all wheat-growing districts. Lines bred or introduced by the Wheat Research Institute are tried out in field experiments on a wide scale, and two examples of the adoption into farm practice of information secured from trials are firstly, the rapidly increased acreage sown in the variety Cross 7, and secondly, the standard manurial treatment for all crops.

During the last two years, two modifications were introduced into the field technique, and these were (1) the sowing of plots in randomised series, replacing the former regular system, and (2) the method of "sampling" for yield determination instead of whole plot harvesting. Experience from previous years had shown that sowing on a regular lay-out of plots failed to allow for errors introduced by the "fertility slope" found in most fields in which trials were placed, and the new method of sowing has proved itself in providing more reliable data without

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adding to the difficulty of laying down trials. The "sampling" method of harvest has reduced considerably the cost of the work without appreciable loss of accuracy, and it also enables individual plots of earlier maturing varieties to be harvested before other plots in the one trial. An additional advantage lies in the fact that wheat trials can now be carried out in districts where "heading" is practised, as under the earlier whole plot method of harvesting the field work of co-operating farmers was often delayed.

Barley

(b) Barley variety and manurial trials, carried out in collaboration with the Barley Specialists' Committee, which includes representatives of the growers, merchants, and brewers, and also with the Agronomy Division, Department of Scientific and Industrial Research, are conducted on the same lines as are those in connection with wheat. Much useful information regarding the most suitable varieties and manurial treatment has been secured, and this, in conjunction with malting tests carried out by the Canterbury Seed Company, has been of considerable assistance to all concerned. A number of trials with oats have been conducted under the same field technique.

Linen Flax

(c) Investigations in connection with linen flax have been in progress in the South Island for a number of years, and before this crop was grown on a commercial scale as a war activity, a considerable amount of data regarding varieties, manurial treatment, method of sowing, suitable soil types and climatic conditions, yield of seed and fibre and other practical information was available. During the last two years investigational work has been intensified, and the present work covers variety, manurial, and disease control trials, most of which are conducted under the field technique already described. In addition, this season the work has been extended to the North Island, where autumn and spring sown trial areas have been established under a modified investigational technique. All linen flax projects are undertaken in collaboration with the Linen Flax Section, Department of Industries and Commerce, and the Agronomy and Plant Diseases Divisions, Department of Scientific and Industrial Research.

(d) Trials with brassicas, including swedes, turnips, rape and chou moellier and root crops generally, were among the very early activities of the Fields Division, and useful practical information was made available to farmers. The introduction of a field technique enabling more accurate data to be secured from trials made possible the planning of experiments to investigate small differences. In this connection, the work on manurial treatments causing germination injury and yield reduction provided the most practical results, and the now general use of "reverted" phosphate can be quoted as an outstanding example of the adoption into farm practice of the results of investigational work. The introduction of serpentine superphosphate made essential the carrying out of a large number of trials on brassicas, and all of these supplied valuable information.

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Disease Control

Work in connection with disease control, planned in collaboration with the Plant Diseases Division, has stressed the value of sowing resistant varieties, while recently the results from the use of mercurated phosphate on club-root infected areas indicated the potentialities of this fertiliser in the south. The use of borax in the control of mottle heart of swedes and turnips, was brought about largely as the result of a comprehensive series of trials planned by the Fields Division.

(e) Investigational work in connection with potatoes has been concerned principally with varieties, manurial treatment, the value of certified seed and disease control. During the period under review many new varieties and methods of coping with disease have been tried out, and information secured has become standard farm practice. The value of certified seed has been amply demonstrated, while in the major cropping districts the use of superphosphate and sulphate of ammonia is a direct result of field trials. In early cropping districts, recent work has been in connection with a reduction in the rate of manuring, and in addition, serpentine superphosphate is being tried out on representative potato growing areas throughout the Dominion.

(f) Field trials with other crops include those on lupins, of which the commercial blue, sweet yellow and sweet blue are under comparative tests, field peas, lucerne, carob bean and other miscellaneous plants, and a series of plots in pampas grass is also under observation. A considerable amount of information regarding maize and soya beans has been secured and published.

The fact that crop trials were usually sown with the seven-coulter Departmental drill restricted detailed investigations to those districts where these implements were available, but last season a field technique based on the "half-drill" method was employed, and this gave reliable results where two, four or six treatments were sown. This increased the scope of crop trials, a number of which are now carried out in the North Island and in new districts in the South Island.

The lay-out of crop trials sown with the seven-coulter Departmental drill (Hudson).

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In connection with all crop investigations, officers from all Departments concerned, who form the Field Crop Committee, examine results and plan trials for the coming year.

(5) Young Farmers' Club Trials

Last season it was decided to extend investigational work along lines found satisfactory by Harrington in Saskatchewan, where reasonably accurate information was secured from a large number of plots laid down and harvested under one technique, and taking each as one replication in the whole trial. In New Zealand, in co-operation with members of Young Farmers' Clubs, assisted by Instructors in Agriculture, a large number of trials with wheat, oats, barley, linen flax and other common farm crops, as well as others dealing with pasture strains and manurial practice, were laid down. The project was extended to include pupils of District High Schools through the co-operation of Education Board instructors and headmasters. More than 230 trials have been established, and are being reported upon and recorded under a specially designed system, and while there will be initial difficulties to overcome before this method of extended field trials can be considered entirely satisfactory, it is obvious that useful information will be secured. All who co-operate in this work will improve their knowledge of the project undertaken, and in addition will become familiar with field investigations and realise their potentialities for coping with farm problems.

(6) Crop and Pasture Surveys

For many years surveys of a general nature have been an important feature of Fields Division activities, and these have supplied useful information. The work on cereals and root crops are examples of such investigations on general lines, while analysis of data on pasture species covered feed flavour from pastures, and the value of lucerne, pampas, and prairie grass. Last season the first detailed survey, covering over 900 linen flax crops, was completed and the data published in the "Journal." This work is being continued, and the information secured is of undoubted value at this time, when the crop is of such importance. A similar detailed survey in connection with barley crops is planned for this season.

A pasture survey, based on utilisation and soil potentialities, has been completed by Instructors, and this information is being presented as a set of coloured maps of the North and South Island. When published, this data will be of considerable value, not only to Departmental officers, but also to all concerned in farming.

(7) General Projects

Among the general projects are stock feeding trials, each series dealing with a problem of local interest, and typical examples are the pig feeding experiments carried out on the Demonstration Farm at Dargaville.

More than 400 plant specimens are contained in the herbarium, which is indexed in detail, and to which material is being constantly added.

Results of investigational work are written up for publication in the "Journal of Agriculture" and the "Journal of Science and Technology," and all projects undertaken are planned to include such modifications in technique as can be incorporated from overseas work of a similar nature. Articles of value are indexed in a specially designed system, and these, read in conjunction with the information available from the comprehensive records covering results obtained in New Zealand, make possible the rapid summarising of available data covering a wide range of subjects of agricultural interest.

This description of the development and scope of investigational work provides merely a brief summary of the activities, which are dependent almost entirely on the enthusiasm and energy of the field officers of the Division. The co-operation of officers of other Divisions and Departments, and the good will of farmers who permit trials to be conducted on their holdings, are both essential to the success of this work as a whole.

Throughout the period of development to the present detailed system of conducting trials, the aim has been to make the office of the Field Crop Experimentalist a place where information secured from many sources may be collected, summarised and released for general use. If the long-term scheme now planned is completed, each Instructor will be supplied with accurate details, in map or graph form, covering rainfall and soil temperature records, vegetative cover, responses to lime and fertiliser on each soil type, total pasture and individual species production, and land utilisation. The usual routine information secured from crop trials and surveys will also be supplied, and the practical value of all this data is obvious.

In this article the fact that much of the work has been original in character and that modifications in accordance with modern technique have been introduced has been stressed. From the scope of this activity and the accuracy of the data released for general information, it will be realised that the raw material, in the form of detailed reports, supplied by Instructors, is studied and processed into an article rapidly absorbed into agricultural practice. Consequently, the investigational work of the Division is an activity in which all officers play an important part, and the high standard of accuracy of information released for the use of the farming community is a striking example of team work, in which all should find cause for satisfaction.

Acknowledgment must be given to Mr. A. G. Elliott, Field Crop Experimentalist of the Fields Division, for his assistance in the compilation of this summary, and thanks are due to his staff for the work undertaken in gathering together the data presented.

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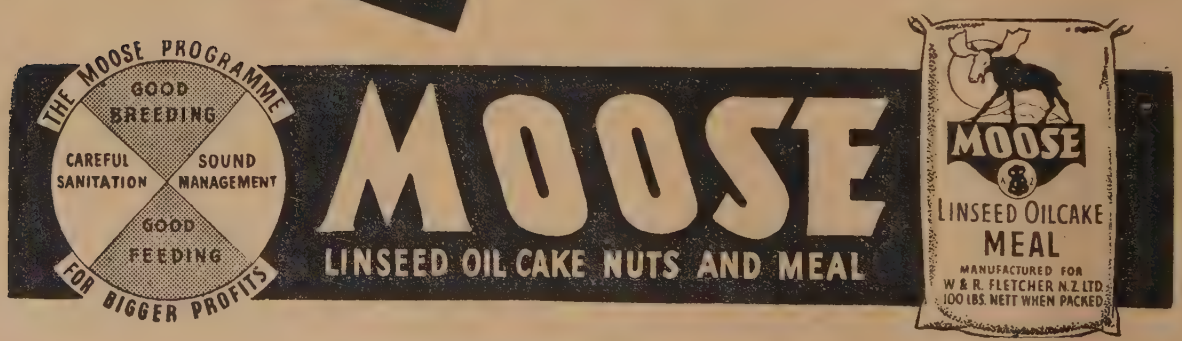


BREAD RATIONING CAN HAPPEN HERE!

Wairarapa Farmers Can Help to Overcome This Threat

By N. LAMONT, Instructor in Agriculture, Masterton.

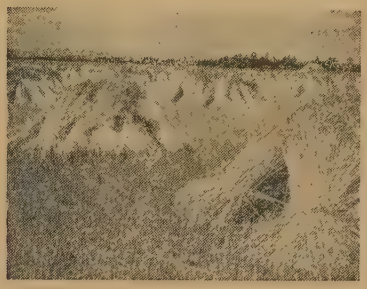
THE realisation that New Zealand is threatened with a serious shortage of certain essential foodstuffs will come as a rude shock to most of us. Complacent in the knowledge that our little country is per head of population the greatest exporter of foodstuffs in the world, we have overlooked the fact that our primary production is as limited in variety as it is great in quantity.

Stated in the simplest possible terms, the situation that faces us is no more and no less than the prospect of bread rationing in the most productive and well favoured of the world's farming countries.

A Responsibility

As one of the more prominent wheat growing areas in the North Island the Wairarapa district must accept a large share of the responsibility not only for growing its reasonable share of the Dominion's wheat area, but also for growing an extra acreage to help compensate for the big demands that have been made on South Island farmers for linen flax and crop seeds. There is, indeed, no reason why the North Island should not undertake to make up the whole of the deficiency of 50,000 acres that existed last year.

In the Wairarapa district alone, there is approximately 100,000 acres of country that could grow wheat, and although the highest figure yet named, as a reasonable aim for next year's wheat crop is 5000 acres, it would not be impossible to double that figure. There need be no fear that we will have an embarrassing surplus of wheat—a surplus over immediate requirements would indeed be something for which to be devoutly thankful.



Stooked Hunters Wheat on the Upper Plain.
[N. Lamont, photograph.

Wheat Soils of Wairarapa

In the main plain of the Wairarapa there is about 150,000 acres of ploughable country, after making some allowance for the lake-side areas subject to flooding and for certain areas of "boulder and gorse" country. Approximately one-third of this is devoted to dairying, so that we can reckon

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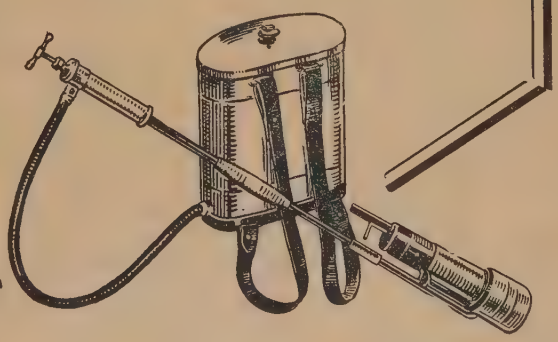


upon 100,000 as a very approximate figure for our "agricultural" country.

By counties the position is somewhat as follows:—

County.	Agricultural Area. Clay Soils.	Light and Medium Soils.	Total.	Usual Wheat Area.
	Acres.	Acres.	Acres.	Acres.
Masterton	5,000	18,000	23,000	800 — 1,000
Wairarapa South	7,000	20,000	27,000	50 — 100
Featherston ..	15,000	25,000	40,000	150 — 200

While these figures are necessarily only very approximate estimates, they serve to illustrate one or two points which have a bearing on the present need for increased wheat growing. Not only do they establish the fact that the district has ample areas available for wheat growing but they also indicate very clearly where these new areas must be sought.

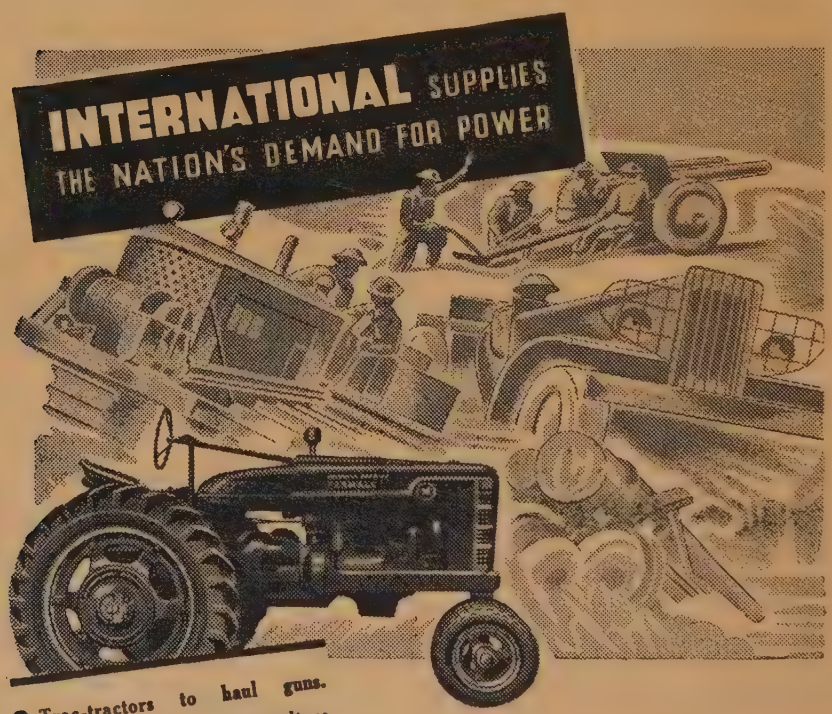
In the past, about 80 per cent. of the Wairarapa wheat area has been located in the Masterton County, despite the fact that nearly 80 per cent. of the potential wheat country is located in the other two counties. There are many reasons for the relative unpopularity of wheat growing in the Wairarapa South and Featherston counties, but one is forced to the conclusion that the principal reason is to be found simply in the absence of "wheat mindedness" amongst farmers in those areas. Wheat is unquestionably a profitable crop and a safe crop, even though the growing of it is perhaps a little more exacting than the easy going "permanent pasture" type of farming.

In other words, there are no insurmountable practical difficulties in the way of growing more wheat in the Wairarapa, and more especially in the Southern counties. We have varieties suitable for light and for heavy country and all that remains is the inclination of growers to get on with the job.

THRESHING FACILITIES.

The district is fortunately well prepared with threshing machinery to handle a greatly increased wheat crop. At the present time, there are seventeen mills in the district, eight combines, and nine stationary mills, while there seems every likelihood that further combines will be brought into the district before next season, if they are available. The sturdy, tight eared wheats that have been produced for us by the Wheat Research Institute ensure a long working season for the combines as well as for mills handling stooked crops, and it is estimated that 5,000 acres could be handled with very little organisation and with very little stacking.

The possible necessity for stacking cannot, in present circumstances, be regarded as any hindrance to the growing of wheat, and the Government has given a specific guarantee that labour will be found from military camps or elsewhere. Once stacking is considered, of course, there is no limit to the acreage that could be threshed with present facilities. Naturally at present,



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So long as it is well worked underneath, a wheat seed-bed should not be too fine on the surface.

[*N. Lamont, photograph.*

mills are concentrated in the Masterton county, where the bulk of our wheat is grown, but we are already assured of the full co-operation of contractors should any redistribution of threshing facilities prove necessary.

Varieties in Wairarapa

Again mainly as a result of the wise policy of the Wheat Research Institute, we need concern ourselves with only a few varieties of wheat. All are first class wheats and the choice of variety is simply a matter of individual circumstances and soil type. The following table shows estimates of the popularity and the probable average yield of our four main varieties:—

Variety.	Percentage of Total Wheat Area.	Average Yield in bus. per ac.
Cross Seven	40+	30—35
S.S. Tuscan	40—	30—35
Hunters	10+	35—40
Tainui	10—	30

The plus and minus signs indicate the trends in popularity.

Cross 7 is probably by now (this year figures being not yet available) our most popular wheat and is likely to lead S.S. Tuscan by a small margin. Hunters is still an important wheat and the recent introduction, Tainui, has now assumed what is likely to be its settled status in the district.

The estimate of the yields of Cross 7 and S.S. Tuscan will also be much the same this year, although in the past the former has usually led the way. This is due, inevitably, to the increasing popularity of Cross 7 and to the consequent tendency to sow it on the poorer classes of country. This is undoubtedly a first-class wheat and is unsurpassed for general sturdiness in respect to resistance to shaking and to lodging, on even the strongest country. On the lighter soils, however, Tuscan should still be sown and will prove more satisfactory than Cross 7. Both are good heading wheats.

In the sentence above the unqualified word "Tuscan" has been used deliberately because the old Solid Straw Tuscan has now a new rival, Fife-Tuscan, which is likely to replace its ancestor. Although only a few crops of this new variety were sown in the Wairarapa this year, they served to confirm experimental data relating to it, and for the lighter soils it can now be definitely recommended.

Hunters will hold its own by virtue of its resistance to lodging and its high yields on strong country, but its tendency to shake and its long straw make it quite unsuitable for heading. In fact one would suggest that this year Hunters should be grown only by those who own their own binders and who can, in consequence, be sure of cutting before the crop is over ripe.

Owing to its weak straw, Tainui is regarded with doubtful eyes, at least for any but light country. On the other hand, it is a very tight eared wheat, and even badly lodged crops have yielded up to 50 bus. per acre. For late spring sowing on light country Tainui is unexcelled.

Time to Sow

Hunters, for best results, must be sown in May or early June. Cross 7 and Tuscan (Solid Straw or Fife-Tuscan) almost any time from May to

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J.A. 16/5/42

early August, whereas good crops of Tainui have been obtained from sowings as late as early October.

Except for Hunters, the time of sowing can be decided by soil conditions and other circumstances. Although early spring sowing of Tuscan and Cross 7 has been popular in the Wairarapa in past seasons, there is already evidence that there will be a big area sown this autumn and winter.

This is no doubt in part due to a very wise desire to spread the demand on machinery and labour for cultivation and sowing and also in part to the unhappy recollections of last spring when wet weather so seriously delayed operations. Provided the ground does not become waterlogged, it is infinitely preferable to winter sow on clay and heavy country than to take the risk of delays later on. Where the ground is free draining early winter sowing is not so necessary, as there is every prospect that the ground can be worked in early August.

Heading S.S. Tuscan near Masterton. As a good market for the straw is assured, the crop is being cut rather lower than usual.

[N. Lamont, photograph.

Preparation and Sowing

Ideally the preparation for a wheat crop should extend over years—or, in other words, the best wheat crops are grown as part of a proper rotation. Any "cash" crop will inevitably reduce soil fertility and this must be accepted, but such a reduction is by no means permanent and relates principally to that most unstable of plant foods, nitrogen. Although one tends to talk rather loosely of "light" or "heavy" country, the significance of these terms in the present instance lies not in the clay content but in the nitrogen content of the soils. Light textured soils are no doubt less retentive of soil nitrogen than heavy or close textured soils,

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but in both cases, it is management practice rather than geological soil types that determines the nitrogen status.

As a general principle, one may say that any area that has carried a heavy concentration of stock during the previous twelve months will grow good wheat. This heavy carrying may be the result of excellence of pasture or as an incidental to the feeding off of

A well grown crop of S.S. Tuscan on clay country near Pirinoa.
[N. Lamont, photograph.

rape or turnips. Under such conditions a moderate phosphate dressing will suffice and good results be obtained. The influence of previous treatment must also be borne in mind when selecting a variety. For instance, if a light textured soil has grown a good clover for two years, followed by a good crop of rape, one would probably get best results from Cross 7, but if the nitrogen content of the soil had not been built up in this manner, or had already been depleted by cereal cropping, then Tuscan could be recommended.

The immediate preparation of a seedbed for wheat is not a very exacting operation. The special circumstances of wheat after grass will be discussed in a separate paragraph and for ground already in crop little more need be said than that the ground should be well stirred up, but not too finely worked, at least one month before sowing.

Wheat Following Grass

Despite the controversy that this subject raises, in the Wairarapa at least, the point can probably be summed up in the following two statements:—

(a) Wheat following grass is not as successful as wheat following, say, rape.

(b) Good wheat crops can be grown after grass provided the job is tackled in the right way and, in the present circumstances, this practice is more than justifiable.

There is no doubt that disaster will follow if a strong turf is turned over, the area disced and harrowed, and the wheat sown, all in the space of a week or two. Ordinary discing will not chop up a tough turf layer after ploughing and no plant roots can be expected to penetrate such a barrrier. Deep cultivation with a tine cultivator is an improvement, but the recommended procedure is as follows:—

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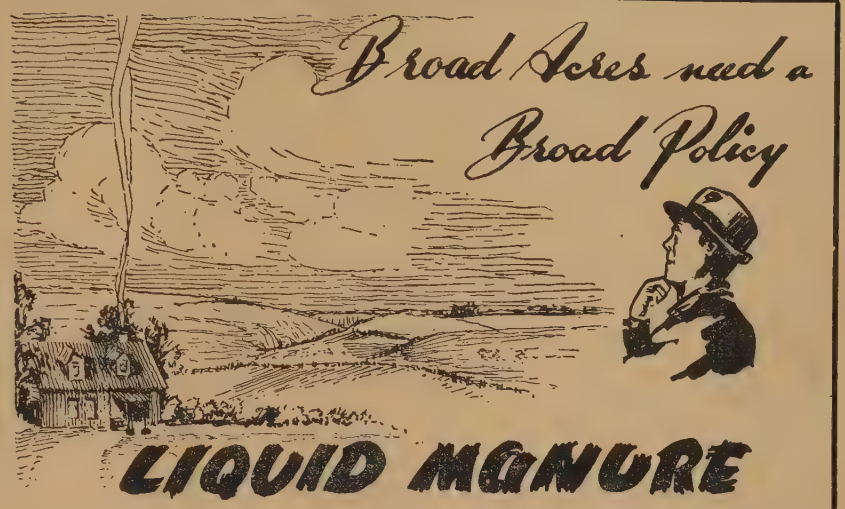

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Either skim plough and disc, or use heavy discs only, on stone-free country before deep ploughing. On stoney country cultivators may have to be used, but the object is the same—to break up the turf mat thoroughly before turning it under with the plough. By doing so, cultivation after ploughing will go right down to the bottom of the furrow and the plant roots can then develop fully. The longer the interval between ploughing and sowing, the better, in order to give the turf as long as possible to rot, and a month should be regarded as the absolute minimum.

To grow the wheat area that is urgently required, we will almost certianly have to sow after grass in some instances, and providing the job is done thoroughly along the lines suggested above, good crops will be assured if the country is at all suitable. It will be understood from the remarks in the preceding paragraph that the better the pasture the better will be the wheat crop. It is stock manure that grows wheat.

Summary

(1) In the Wairarapa, we can be assured that there is abundant land and ample threshing machinery to handle much more than 5,000 acres.

(2) Varieties suited to the district, with the appropriate soil type, are set out in the accompanying table.

(3) The preparation of a seed-bed for wheat is not an exacting procedure. For winter sowing particularly, the surface should not be too fine or caking may follow. More care and preparation is necessary where the wheat is grown after grass, but good crops can be obtained by this practice. The better the grass and consequently, the more stock the area has been carrying, the better the wheat will be.

Variety.	Time to Sow.	Soil.	Weaknesses.
Hunters ..	Late autumn and winter	Heavy or "Strong"	Inclined to shake
Cross 7 ..	Winter or early spring	Heavy or medium	—
Fife-Tuscan or S.S. Tuscan	Winter or early spring	Medium or light	Lodges on strong country
Tainui	Spring	Light	Weak straw

Certified Government Stock Seeds.

THE Department of Agriculture is now accepting applications for the following Certified Government Stock Seeds:—

Perennial Ryegrass,
Italian Ryegrass,
Montgomery Red Clover,
White Clover.

Supplies of seed will be allocated among the applications received in order to provide for the best utilisation of the material available.

Applications, which should include the quantity of seed required and the acreage of the area to be sown, must be forwarded through a mercantile firm to reach the office of the Director of the Fields Division, Department of Agriculture, Wellington, not later than June 30th.

Slaughterings of Stock

THE following returns of slaughterings of stock at meat export slaughterhouses and abattoirs for the twelve months, May-April, 1941-42, have been compiled by the Livestock Division:—

District	Cattle	Calves	Sheep	Of which Ewes were	Lambs	Swine
North Island.						
Meat-export Slaughterhouses—						
Auckland	192,585	583,468	392,826	226,388	1,478,119	422,063
Poverty Bay	57,865	53,919	735,175	386,078	1,766,849	32,880
Taranaki-Manawatu ..	85,572	218,176	495,517	305,024	1,275,554	184,755
Wairarapa-Wellington ..	44,763	26,333	448,796	275,521	1,200,680	38.573
Totals	380,785	881,896	2,072,314	1,193,011	5,721,202	678,271
Abattoirs	118,511	48,189	493,442	249,139	100,394	133.808
North Island Totals ..	499,296	930,085	2,565,756	1,442,150	5,821,596	812,079
South Island.						
Meat-export Slaughterhouses—						
Nelson-Marlborough ..	884	11,101	41,323	17,878	261,147	13,209
Canterbury	11,433	41,536	627,428	553,966	2,559,746	40,126
Otago-Southland	5,697	42,124	553,660	508,206	2,634,052	7,969
Totals	18,014	94,761	1,222,411	1,080,050	5,454,945	61,304
Abattoirs	55,196	13,508	275,901	147,609	55.681	45,077
South Island Totals ..	73,210	108,269	1,498,312	1,227,659	5,510,626	106,381
Dominion.						
Meat-expt. Slaughterhouses	398,799	976,657	3,294,725	2,273,061	11,176,147	739,575
Abattoirs	173,707	61,697	769,343	396,748	156,075	178.885
Grand Totals	572,506	1,038,354	4,064,068	2,669,809	11,332,222	918,460
Same Period, 1940-41— Meat Export Slaughterhouses and Abattoirs ..	620,781	1,057,529	3,672,528	2,479,645	11,461,269	933,558
Same Period, 1939-40— Meat Export Slaughterhouses and Abattoirs ..	560,937	1,054,751	4,211,936	2,429,580	10,763,022	772,994

Slaughterings of Pigs

The 103,973 pigs slaughtered at meat-export slaughterhouses and abattoirs during the month of April, 1942, were distributed in weight ranges approximately as follows:—

Up to 60 lb.	2,936
61-110 lb.	53,173
111-120 lb.	10,873
121-160 lb.	27,860
161-180 lb.	3,235
Over 180 lb.	2,503
Sundries	3,393
	103,973

The grading of porkers is 90 per cent. of 1st quality and 10 per cent. of second quality, and that of baconers is 82 per cent. of prime 1's, 14 per cent. of prime 2's and 4 per cent. of second quality.

In the different weight ranges of baconers the grading is as follows:—

111-120 lb.	90%, 7%, 3% of P1, P2 and 2nds respectively.
121-160 lb.	80%, 15%, 5% of P1, P2 and 2nds respectively.
161-180 lb.	70%, 24%, 6% of P1, P2 and 2nds respectively.

The Northern King Country has not been looked upon as a commercial potato-growing area, but there appears to be no reason why the farmers in this district should not grow at least sufficient for their own needs, and as a war effort extend the area so that part of the crops will be available to supply the requirements of the fighting services.

Potato Growing in King Country

By
K. M. MONTGOMERY,
Fields Instructor,
Te Kuiti.

FOLLOWING upon the appeal made for the growing of certain crops (carrots, swedes, potatoes), which can be used on the farm if there is no demand for them on the market, a number of farmers intend to increase the area which they normally plant in potatoes.

Before extending the area to any considerable acreage, however, the grower will need to consider, in view of the existing labour position, the method of planting and lifting the crop. Digging with the fork is slow and laborious, and there are very few expert fork diggers available. There are a few mechanical diggers in various parts of the country, and the grower would do well to arrange for the lifting of the crop before putting in an extensive area.

Where it is possible to arrange for a mechanical digger, greater care is required in the planting and "after care" of the crop than is the case where the crop is to be dug with the fork. With fork digging it is not so important if the rows are not straight and become weedy before digging; but with the mechanical digger the rows require to be reasonably straight and comparatively free of weeds on the sides of the ridges. Where mechanical digging is to be the method of lifting the crop, it would be advantageous to plant the seed in furrows made with the "ridging" plough; but if this is not available they can be planted in the ordinary plough furrow.

Choice of Varieties

The writer has been growing potatoes in the Te Kuiti district for the past seven years and has tried out most of the best known commercial varieties. From the experience gained, it would seem advisable to grow a succession of varieties, i.e., first early, Epicure; early main crop, Aucklander Short Top; main crop, Arran Chief, Maori Chief, Sir J. G. Wilson.

Epicure is the earliest maturing variety and can be dug in twelve weeks from the time of planting. Epicure is not a good keeper and retains its best flavour only for a comparatively short period. About five to six weeks' supply is ample on most farms. By this time the early main crop, Aucklander Short Top, is ready.

Aucklander Short Top, which is sometimes called Sutton's Supreme, is undoubtedly one of the favourites of the local market. It appears to be suited to a variety of soils and when certified seed is used it can be relied upon to return a good yield under average climatic conditions.

Arran Chief, a main cropper, is well worth while including in the series of varieties to be grown. It likes slightly stronger land than Aucklander Short Top, is a good yielder, a better keeper, not so liable to skin damage, and matures later.

On account of their good resistance to "late blight" some growers prefer Maori Chief, Sir J. G. Wilson, and Gamekeeper. All these varieties tend to deteriorate if selection of seed tubers is not made from year to year, and on this account growers should make periodical purchases of certified seed, preferably from the South.

Dakotas have been somewhat disappointing even when certified seed

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has been used but possibly this is due to the comparatively short growing season compared with the South Island. Still a few rows of this variety are worth a trial as this is one of the latest maturing and longest keeping varieties we have. This potato is well suited for use in the last few months before the next season's new potatoes come on the market.

Certified Seed

All growers aim at heavy yields, and in this objective the most important factor is the use of productive seed, i.e., Government certified seed. The initial outlay in the purchase of such seed may be slightly greater, but rent and cultivation costs are the same, and practically the same labour is required to dig a light crop as is the case with a heavy crop. If, however, it is not possible to obtain Government certified seed, the grower should use large seed or small table tubers or even tables cut in two. Diseased parent plants seldom produce these larger sized tubers and the chances of obtaining a good yield from small seed of unknown origin are very slender.

How often have you heard the remark, "I didn't dig as much as I planted?" Did you in turn ask, "What was the origin of the seed?" Whenever possible the greening and sprouting of seed should be practised by spreading the tubers out in a shallow layer in subdued sunlight. This tends to make for a more even establishment and any tubers not sprouting or making weak sprouts can be easily detected and should be discarded. Allowing the tubers to make long, spindly sprouts and then rubbing these sprouts off definitely weakens the tuber and affects the subsequent growth. Experience has shown that greened and sprouted tubers can be cut with less danger of misses than can unsprouted seed. Aucklander Short Top is one of the varieties which should be planted immediately after cutting. It is advisable not to cut large quantities, but to cut as required.

Fertiliser

The amount of phosphatic fertiliser which can be purchased is fixed in the Phosphatic Control Regulations. The addition of some farmyard manure would help to compensate for the reduced quantity of fertiliser usually used, but this should not be used liberally as it tends to give rise to skin disfiguration and roughness.

Spraying

There are several diseases which can affect the potato, but the main one which concerns the producer of saleable tubers is late blight. This disease is more apparent in years when humid conditions prevail during the growing season. In the home garden the spraying of the small patch with Bordeaux mixture can be undertaken with a knapsack sprayer or bucket pump. If it is intended to spray, the first application should be made when the plants are about 6 ins. high and before the first moulding up. Another spray can be applied before the next moulding up when the plants are 12 to 15 ins. high, and a further spray can be applied at about flowering time. If at a later date black spots can be seen on the leaves or the stems, a further application will check the spread of the disease. The spray should be applied to the under sides of the leaves and the whole plant well wetted.

If, however, spraying has been neglected and the disease become prevalent, consideration should be given to the immediate digging of the crop. On large, promiscuous areas it is not practicable to spray in the above-mentioned manner, and as there are very few, if any, horse-drawn sprayers available, the grower will have to risk the chance of a late blight infection.

Inter-Cultivation

Weeds rob the crop and weed growth can be checked by harrowing (tine harrows) across the rows until the plants are even 6 ins. high. Inter-row cultivation with a light horse hoe will also assist in checking weed growth. Thorough moulding is essential to reduce the attack of the potato-moth and also to check spores of late blight from being washed down to the tubers. The mould should be brought to a narrow top. A wide or hollow top is almost useless.

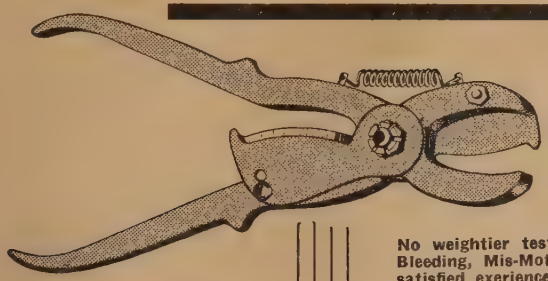
Digging

The crop should be ready for digging when the haulms have died off. The haulms of some varieties die back further than others and Aucklander Short Top in particular is noticeable in this respect. When mature the haulms lie flat and are devoid of leaves.

In the King Country, with the well distributed rainfall, weed growth comes away rapidly once the haulms have died off and light is allowed to reach the ground. If this weed growth is allowed to become strong it results in a good deal of trouble when using the mechanical digger. The roots of rib-grass, sorrel, and strong Yorkshire fog all help to bind the soil together and the agitators are unable to shake the soil free of them. This can be very largely overcome by scarifying between the rows with a horse hoe and harrowing with tripods will reduce the weed content on the top of the rows. All potatoes dug during the day should be picked up and not allowed to lie out overnight to receive the attentions of the potato-moth.

Conclusion

The time is now opportune for the grower to arrange for next season's crop. Grassland should be skim ploughed and allowed to lie fallow until the spring. In the spring the skim can be worked and then deep ploughed ready for final cultivation near planting time. Orders for certified seed should be placed with the merchants and not left to the last minute. At a later date certified seed might not be available. If the area is to be extended to any acreage, arrangements should be made for either contract digging of the crop or the hiring of a mechanical digger. A supply of good super sacks should be kept on hand in which to market the crop.



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NS.12/27

A simple but efficient water supply has been provided on a North Auckland farm, but the system is applicable to a great many farms throughout the Dominion. A feature of the system is its simplicity and permanency.

SIMPLE WATER SUPPLY SYSTEM

By
P. S. SYME,
Instructor in Agriculture,
Warkworth.

THE importance of a plentiful supply of water for stock is fully appreciated by every farmer, and on farms where the supply is inadequate it can safely be assumed that this is due more to natural difficulties, or to lack of finance, than to any want of enterprise by the farmer.

Admitting that on some farms the problem of finding a good water supply is peculiarly difficult, while the additional cost involved in reticulation may be quite considerable, it is indeed surprising how simply, and yet how efficiently, a plentiful supply can sometimes be provided at a very trifling cost in both labour and money.

The property of Messrs. T. H. Edwards and Sons, near Warkworth, covers about 1000 acres, and much of the land is rather broken and hilly. At first sight, the search for a permanent water supply might appear a highly-speculative venture, while, considering the size of the farm and the broken nature of the ground, reticulation costs might seem almost prohibitive. Actually, Messrs. Edwards solved the problem in a very simple manner, and without having recourse to boring or incurring any heavy expense.

When first considering the water problem, Messrs. Edwards noticed that small surface springs occurred in the bottom of most of the gullies. Although these springs ceased to flow through the summer, sufficient water percolated through to keep the surrounding ground moist even in the driest season. Messrs. Edwards conceived the idea of clearing the mouth of one of these springs to improve the flow, and then impounding the water in a miniature concrete dam. It was then found that, given the chance to accumulate, even a tiny trickle was quite capable of providing an adequate and permanent supply for the needs of a fair-sized herd.

Their first effort was so successful that they have continued with the work as additional land was broken in, and now have nine of these reservoirs successfully watering different portions of the farm.

Constructing a Reservoir

When constructing a reservoir, Messrs. Edwards commenced by pros-

(1) Showing how a tiny spring has been utilised in the narrow bottom of a gully.
(Drake photograph.)

(2) View of reservoir showing concrete dam just below spring. The overflow can be seen about the middle of the dam. Note how the end of the dam has been continued right into the solid clay.
(Drake photograph.)

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pecting the bottom of a convenient gully, eventually selecting a site where the ground is known to lie wet throughout even a dry summer. It is an advantage if the proposed site is situated where the walls of the gully narrow, as this reduces the length of dam needed, and facilitates bedding the ends in solid ground. Since the flow of water available is generally much too small to allow any margin for wastage, some care is necessary in building the dam.

The dam is erected close to the spring to collect as much of the water as possible, and to reduce the loss by seepage or evaporation. The foundation must be sunk down into solid clay along the entire length, and, if necessary, wings must be carried from each end to bed into the clay up to slightly above the level of the water in the dam. These precautions are necessary to prevent loss by seepage under the dam or past the ends, and also to prevent eels from burrowing under the dam and allowing the water to escape.

(3) Showing elbow which leads overflow to underground drain. This is necessary to prevent pugging by stock. Note the tiny flow of water from the collecting channel to the reservoir.

(Drake photograph.)

The trench for the foundation is about four inches wide and serves as the bottom portion of the mould. The additional height required is secured by boarding in the ordinary way. Messrs. Edwards find that a four-inch wall, built from a 6-1 mixture of good shingle and cement and well rammed, is quite satisfactory. The actual

Efficient water supply on the farm

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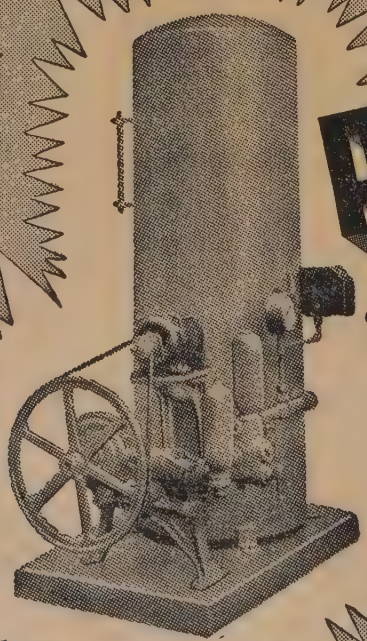

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neight of the dam depends on the contour of the ground and the storage capacity required. A depth of about two feet of water at the face of the dam would be about normal.

Overflow and Drainage

When erecting the boards for the mould, provision should be made for a temporary hole at the bottom to permit the water to escape until the concrete has set. This hole is then plugged when the reservoir is ready for use. In the top of the dam, a round depression is made in the soft concrete and filled with a plug of clay rolled between the hands. When the concrete has set, the clay is removed and a two-inch elbow is cemented in to act as an overflow. This elbow is then connected to an underground drain running down from the front of the dam, to prevent the approach from being constantly kept wet and pugged by drinking stock.

(4) View of dam showing overflow pipe and mouth of underground drain, with drainage channel. *(Drake photograph.)*

If the reservoir is likely to be required to provide a supplementary supply to a trough at a lower level at some future date, a short length of pipe—say, about 8 inches—should be set into the mould, about a foot from the top, before placing the concrete. A length of piping can then be coupled to this at any time if required. Once the concrete has had time to set, the reservoir is then excavated to provide the storage capacity required, and the area is railed off to prevent stock from wading.

Proved in Practice

The reservoirs already constructed have been well tried out over a number of years, and have proved exceedingly satisfactory.

The cost of the material is low, and no skilled labour is needed. It will be noticed that no pumping outfit is required, and that each reservoir acts as a trough. In addition to possessing these obvious merits the system renders long, expensive pipe lines unnecessary; it will last indefinitely with but little attention and no running costs. It is evident that Messrs. Edwards have found the ideal solution to what at first appeared an almost insoluble problem.

Messrs. Edwards's farm is typical of a very considerable number of farms throughout New Zealand, and it is only reasonable to suppose that, on the majority of such farms, a careful search will reveal these tiny trickles of water, which, properly conserved, will supply the needs of a considerable number of stock.

Even if the system can be adopted only on a modified scale, the resulting benefits are real and immediate, while the saving which may be effected in reticulation costs particularly appeal at a time like the present, when piping is both expensive and difficult to procure.

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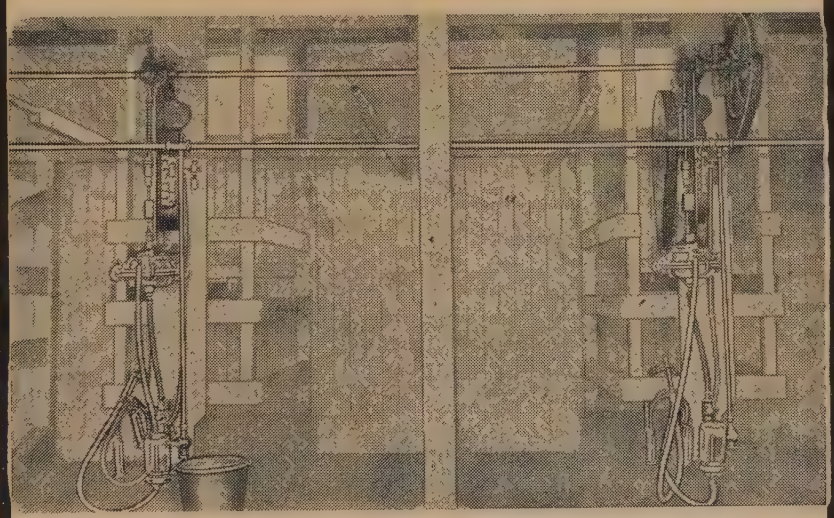

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Dosing is often as important as dipping!

Veterinary Notes for the Farmer

Simple, But Effective

Contributed by the
LIVESTOCK DIVISION

PIGS are hard animals to fence in and offensive animals to let loose. So much so that many farmers give up the idea of fencing them and keep them in sties where they are out of mischief. Although the sty keeps them out of mischief it doesn't keep them "out of mind," rather the reverse takes place. They must be fed and cleaned out regularly and given more care than they want if they are outside.

Most people don't object to going to a bit of trouble when they can see the result of effort spent, but few can take interest in a job that shows no results. Attending to sows in sties between farrowings is a job for which you see no immediate results, and sows that are shut up often show the results of inattention, especially through the absence of variety in their feed.

There has certainly been an attempt to get sows out in the paddock. Fences have been improved, tethering has been employed, electric fences have been used, and generally it should be gratifying to hear the remarks of competent observers when they say that the most noticeable change in pig keeping in New Zealand in the last 20 years is the almost total disappearance of paralysis through pigs being put to grass.

Nevertheless there are still lots of places where you are told that the sows are not in the cow paddock because the fences are not pig proof. From the cow paddock the sows can get into that patch of maize or into the garden, or worst of all into the neighbour's. The owner knows they ought to be out at grass, but he can't pig-proof all the fences and he has no alternative except to leave the pigs in a sty or in a small bare yard.

Cheap and Easy Way

Those who want a reliable and relatively cheap and easy way of keeping pigs fenced should be interested in the device invented by a Hastings farmer. Mr. Smith puts collars on his sows which stop them from going through ordinary wire fences. These collars are made of ½ in. or 7-16th in. round iron bent to fit the pig's neck behind the cheeks. The ends are tied with a piece of fencing wire and bent forward as shown in Fig. 1. Each pig has to be fitted individually and adjustments may be necessary as the pig grows or gets fatter. The sows in the picture have been wearing their collars now for eighteen months and show no signs of being chafed.

Fig. 1.—Pig fitted with collar. Note the clearance for the gullet.

The collar stops a pig from going through a wire fence that is in a reasonable state of repair. Mr. Smith's fences are perhaps 20 years old. They are good cow fences that have still a lot of life in them, but the wires are not tight, and but for the collars on the pigs the fences would not be pig-proof. Nevertheless, not a single sow with a collar on has gone through these fences during the last eighteen months.

It takes about five minutes to make one of these collars. The first thing

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Delays through shortage of labour will be unavoidable. We advise you to place your season's order now for delivery later.

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to do is to measure the sow across the bottom of the throat and from the gullet to the crest of the neck. Next make a drawing of the shape required on the wall. Then take a piece of reinforcing rod of the required length and bend it in the vice with a big wrench or a piece of water pipe, to the shape required.

The bottom, under the throat, wants a short V bend of 45 degrees in it like a gambril. This leaves a space for the gullet and provides a means of making the collar wider or narrower at the bottom as required. Start with this V bend in the middle of the rod and work out to either end. Finally fit the collar to the sow by knocking it into shape with the hammer on the top of a gate post. Tie the horns together with a piece of fencing wire and keep a look out for a few days to see that there is no chafing. The iron rod is rigid enough to require hammering if you have to make a short bend and the same rigidity keeps the rod from being pulled out of shape by the pig getting caught in anything.

Fig. 2.—The ends of the collar are tied with wire.

Actually the sows don't get caught up by their collars. After the first half hour's vain attempt to go through the fence with her new collar on, the sow thereafter leaves the fence, and other obstacles that might ensnare her, severely alone.

Officers of the Department are indebted to Mr. Smith for permission to use this information, and to Mr. S. M. King for the time and care spent in obtaining these photographs.

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Answers to Correspondents

Shoulder Slip in Horse

J.A.P. (ARANGA):—

Could you please advise me about a horse in your "Journal." I broke a three-year-old mare in to chains. Then I started ploughing, using three horses. After a week, the mare was lame one morning, and there was no sign of soreness in the hoof, leg, or shoulder. I turned her out, and a stock vet. from Whangarei had a look at her but could find nothing wrong. After about two months a long hollow formed in her left shoulder just where the shoulder blade is. The lameness left her, and I gave her light work and riding. The hollow is still there, but I would like to know if the mare is likely to become lame again, and is there anything I could do for this horse? Of course, she may have been kicked by another horse.

LIVESTOCK DIVISION:—

The history of the case and the description of the mare indicate that she is affected with what is commonly termed shoulder slip. The trouble is brought about in the first place by an injury to the nerve supplying the shoulder muscles, and, as a result, wasting of the muscle takes place. The hollow you describe over the shoulder is caused by wasting of the muscles supplied by the injured nerve. It would not be discernible in the first place, but as the wasting progressed it would be more apparent.

The injury may have been due to a blow or a fall, but is often put down to the fact that during ploughing the horse is obliged to walk with one foot on a lower level than the other, and working and pulling like this cause injury to the nerve.

It is questionable whether anything could be done now in the way of treatment. Time and rest are the main factors to consider. Light work may not do any harm, but as the shoulder will be weakened to some extent by the loss of muscle, any work of a heavy nature should be avoided.

Cow Eating Earth

BONEMEAL (NEW PLYMOUTH):—

I have a valuable cow who has a habit of biting holes in the turf in the paddock so as to eat the earth. I have given her boneflour and salt lick, and she still makes holes so as to get at the soil. I was wondering if you could suggest a combine lick that I could make up for her. I topdress every year, and applied 4 cwt. of blood and bone the year before. I put on a grass mixture and about 5 cwt. of lime, previous to that about 5 cwt. of slag. The pasture has been put down a number of years. There is still a fair amount of clover. I should be very pleased if you could advise me through your "Journal."

LIVESTOCK DIVISION:—

Before advising you satisfactorily I should like a little more information. So far as I know the only likely deficiencies that would lead to this habit would be lack of salt or lack of phosphates. As you have been giving a lick containing these, it would seem that either the lick has not been available for long enough, the cow does not take lick readily, or there is something in the soil which makes it attractive.

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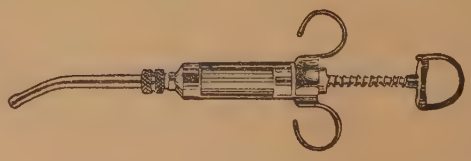

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Bonemeal contains phosphate of lime, so that it is a good source of phosphate, and a mixture of two parts salt to one of bone meal is usually satisfactory. The bonemeal should be "steamed bone flour," which is finely ground and free from odour. If more than one-third of lick is bonemeal it is less likely to be taken readily, as the salt is the most attractive part to stock.

While iodine, cobalt, epsom salts, etc., and various vegetable substances are sometimes added to licks, and may be useful in certain areas, they should not be necessary in this case. The lick should be available at all times, and a good place for it with a milking cow is in the bail.

Advisory Service on Veterinary Matters.

Farmers are invited to submit inquiries connected with the health of their stock, and the replies will be published under this heading.

Please advise whether the cow shows any evidence of deficiency disease, such as reduced production, difficulty in breeding, poor condition and coat, or undue stiffness or lameness of a "rheumaticky" nature; also the conditions under which she can take the lick, and how long you have used it. Is the soil eating more evident in dry periods?

Sometimes where cows are confined to highly improved topdressed pastures with all the feed short and green and consisting of English grasses and clovers, they show a desire for roughage and rubbish, and apparently some coarser feed or a little hay is needed. Does this apply?

Ragwort Poisoning

"G.H.B." (St. HELIERS):

In your February number you give certain information with regard to ragwort poisoning.

I have a paddock rather bad with ragwort and would be glad if you could tell me if it is injurious to stock in a grass mixture made into ensilage.

LIVESTOCK DIVISION:—

Ragwort should not be fed to stock in any form whatsoever; its poisonous properties do not appear to be lessened or neutralised by artificial saving.

Cow's Lack of Milk

"J.A." (ISLINGTON):—

I would much appreciate if you could give me some information regarding one of my cows.

She calved last October, calving to the third calf, the calving being apparently normal. The calf was with her for about 24 hours. When milked she did not give much, but as the days went on she never gave more than a quart; she milks in all quarters, giving the least from the 3 hind teats. I have consulted dairymen, vets., and others and have conflicting replies. Some informed me she would come on to her milk later, others that she would not improve, but may be all right next calving.

The cow, a Guernsey cross, is still being milked but gives only about a pint.

She is in calf, and I should be pleased if you can give me an idea what the trouble is, and whether the cow is likely to come to her milk next calving.

LIVESTOCK DIVISION:—

Unfortunately you have not given any account of the cow's last milking period, which would have been of the greatest help in diagnosing the trouble. Cases where, after a normal calving, a cow does not give the usual quantity of milk are generally due to an attack of mammitis, which began after the cow was dried off; but the shortage of milk may also be caused by continuing to milk the cow when she should have been dried off. In the latter case, the milk secreting cells of the udder have become fatigued and are therefore unable to function to their fullest extent.

As the cow is now in calf I would advise you to dry her off early so that the udder may have a good rest. Unless the milk secreting cells have been permanently weakened I think you may expect a larger supply of milk after the next calving.

Sows with Swollen Joints

"CONSTANT READER" (NGARUAWAHIA)—

I had two sows farrow at the end of December (twenty piglets). A day or two afterwards I noticed some of them lame with swollen joints; many were affected; I lost six. Can you tell me the cause? The sows were in good condition, had free access to good fresh pasture and had some skim milk. They also had good houses. I might mention the June litters were free of the above trouble, and as the sows are due in again this June I would like to prevent the trouble recurring.

LIVESTOCK DIVISION—

Some difference in the methods of feeding of the sows previous to their summer and winter farrowings is evidently responsible for the trouble you describe, the symptoms suggesting more especially a mineral deficiency. A good mineral lick made as follows should be used:—

Steamed bone flour ..	10 parts
Finely ground limestone	2 parts
Salt	1 part
Limonite	½ part

In addition, the sows should receive meat meal daily, starting with ½ lb. and increasing to 2 lb. per day.

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JOSEPH FORD'S FOOT-ROT DRESSING

Lameness in Cow

"W.H.K." (NEW PLYMOUTH)—

Will you please advise me of cause and remedy of the following: I have a moderately good cow which has developed a painful lameness to one rear leg. She can hardly place it on the ground. There is nothing to be seen in the hoof? Is it perhaps a spell of rheumatism? The cow is in good condition.

LIVESTOCK DIVISION—

This may be due to injury about the foot, which should be washed and thoroughly examined, or to sprain of fetlock joint when some swelling should be evident. It may be due to injury or contusion of any part of the leg, including the haunch bone and hip joint. Inflammation (arthritis) of the stifle joint, just at level of the flank fold, is not uncommon in dairy cows. This joint may be found swollen and somewhat distended and painful. This may be due to injury or infection, but is more likely to be associated with imperfect mineral supplies and to be seen in high-producing cows. Treatment is not very satisfactory.

You would get some indication as to cause by the way the lamenesss occurred. Fairly sudden appearance would indicate injury, and this could also be expected where cows are using muddy yards, are on rough or stony ground, or are hunted and harried unduly. Slow and gradual development might indicate mineral deficiency to be corrected by use of bonemeal and salt lick, or be due to chronic arthritis, etc.

When the lameness is very severe and animal unable to bear any weight, there is the possibility of a fractured bone. If the fracture is below the stifle the leg can usually be moved about more freely than usual and "dangles," but if in the thigh bone or at hip joint this might not be apparent.

In any case of severe lameness the cow should not be made to travel, but should have food and water carried to her.

Death of Cats

"H.W." (HAVELOCK):—

Can you please suggest the cause of the death of the cats concerned from the following facts?

About 2½ years ago five strong, healthy cats suddenly died and ever since any kittens we have attempted to raise have died at about 6 months old. The first victim was a semi-wild cat who adopted us at times. He arrived home looking ill one day and then disappeared. Within a week of his return four other cats died and we later found his corpse. The symptoms observed were:—

A strong young cat apparently in perfect health suddenly becomes listless and looks very ill and miserable. For about 1½-2 days it just lies around. After this it seems to have difficulty with breathing, lying on its stomach and gasping. It then rolls on its side, its body jerking convulsively at times and at all times breathing seems difficult. After an hour or so of this it manages to walk a few feet, and after further convulsions expires.

The only cat which survived the first attack of the disease was an old female who is still alive, although four of her kittens (out of three litters) have since died.

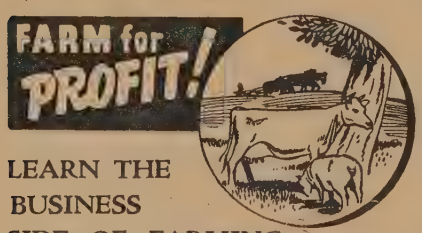
I should be very grateful if you could tell me the cause of their deaths and the remedy, if any, as I need some cats to control mice, etc., around the farm sheds. I was also wondering if other species are liable to infection, although there has been no indication of this so far.

LIVESTOCK DIVISION:—

It cannot be stated with any certainty what this has been due to. The description of symptoms shown by the first case would suggest strychnine poisoning, which might possibly be caused where cats were eating rabbits or other creatures poisoned by strychnine. However, one would not expect all succeeding cats to suffer the same way. There is a type of acute feline enteritis which is very infectious and usually fatal, but the course is not quite so rapid and there is loss of condition and considerable diarrhoea. With this one would expect the infection to disappear from the premises, unless there was a constant succession of affected animals to pass it on.

There is a record of somewhat similar mortality in the Nelson district some years ago, but owing to the delay which occurred before it came to our notice the cause was never determined. You might look into the possibility of poisoning as suggested.

If it were possible to send a freshly dead cat to the Animal Research Station at Wallaceville a post-mortem examination might throw some light on the cause. The carcase should be well rolled up in paper and put in a small box or tin and a covering letter sent to the Superintendent, Animal Research Station, Wallaceville.



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Engineers' Tools Can Be Invaluable On Farm

IT is common knowledge that now as never before, civilisation as we wish it to remain depends very largely on the successful use of machinery, be it the implements of war or production.

Mechanisation on the farm, the increasing use of tractors, and power implements, the displacement of the binder by the header harvester as a labour saver, down to the newest of all our primary industries, the production of linen flax fibre and the equipment for its pulling and handling, demands that the farmer should know, and be able to keep in good running repair, the machinery which he is using. Tools to make speedy repairs are most necessary.

On many farms the best selection of these which can be mustered to meet a breakdown are the "knuckle-dusters" from beneath the seat of the family car. When "something happens," as it frequently does in the harvest season, someone has to be hurriedly dispatched to the nearest settlement to bring assistance, or labour is held up while a budding mechanic attempts to usurp the duties of a spanner with a hammer and chisel. Persuasive language in such "fixes" is of no use.

What is called for often is not an expensive array of machine tools but a fair average selection of working equipment. These, if reasonably cared for, and stored where they may be found when required, can be an invaluable asset in keeping the wheels of production moving. What then is required? Most men will probably have their own ideas on this matter, tempered by their mechanical ability and what they are prepared to spend to keep their particular equipment in efficient order and repair.

There is no disputing the fact that good tools are expensive; they can, however, be a lifelong investment, besides saving their own worth many times over. Here are a few suggestions for tools which would be of use on most farms:

A medium sized (12 inch) high grade shifting spanner. These like many other quality tools are now available in the alloy steels, chrome-vanadium, or chrome-manganese which are more serviceable and durable though, too, more expensive than unalloyed drop forged steel. Sets of spanners of various fixed sizes, ring spanners and box spanners are useful, but in most circumstances are by no means so imperative as is a good shifting spanner.

A good hammer.

A hacksaw frame with spare blades.

A set of punches.

Cold chisels.

One or more sets of pliers capable of wire cutting.

A reliable rule.

A strong screwdriver.

A force feed oilcan.

A selection of files, including rasp, smooth, flat, and round files.

Those who have a small workshop will also find a good metal vice, grindstone, soldering iron and fluid, and a breast drill with a selection of twist drills most useful.

Wrenches of the Stillson type for gripping piping, and thread cutting

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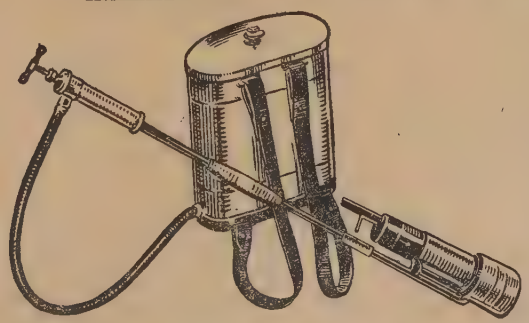

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gear, are also a handy adjunct, but usually unduly expensive for the amount of work for which they are likely to be required.

A large selection of nuts and bolts of various sizes and threads is often much more valuable than is the cost of making them. Sometimes useful assortments of these are available from second-hand car wrecking concerns.

And now a short note on the care of the tools. However great the temptation, each tool should be used only for the purpose for which it was made. A spanner or wrench makes at the best but a poor hammer—its functioning after such treatment is not likely to be improved—a screwdriver makes a poor cold chisel—more than likely it will be irreparably ruined by such abuse. Further, only equipment of sufficient structural strength to tackle the job on hand should be used. For this reason and for ease of working, different sizes of spanners, screwdrivers, and files, are most helpful.

Corrosion or rust is the arch-enemy of every article wrought in iron or steel, unless it is specially treated. Rust is best prevented by a light coating of machinery oil or grease, before tools are stored away. Lastly tools carried on any mobile implement should be contained within a well secured tool box, the lid of which can be firmly shut and locked.

And now for several don'ts. Make a permanent or temporary repair as soon as necessity for action is first noted, don't leave it until a complete breakdown occurs and holds you and others up. Don't depend on your neighbours to provide tools which you might well possess yourself, and having purchased what you need, don't fail to take the care of them they deserve.

—D. M. E. MERRY, Instructor in Agriculture, Nelson.

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Check on Government Certified Seed

A CORRESPONDENT complains that Government certified grass seed is a money-making gag, as farmers pay twice as much for it and do not know what they are getting. He states that he bought some seed last year, Government certified, but that none of the bags was sealed. He bought one full bag of ryegrass seed thinking it would be sealed, but it was not, and he asks how can farmers tell if they are being taken down or not.

In reply, the Fields Division states that Government Certified Grass and Clover seeds are contained in officially sealed sacks, each bearing a certification tag describing the class of seed and giving the identification numbers of the particular line.

If a purchaser who orders Government Certified Grass seed receives seed in sacks not properly sealed and tagged, he is quite within his rights in refusing to accept delivery of such seed, and the absence of this guarantee should raise a suspicion in the purchaser's mind as to the authenticity of the statement that the seed is "Government Certified."

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Spread of Tutsan on Hill Pastures

STARTING from a seed no larger than a speck of dust, and with no defensive spines to afford protection from stock, tutsan appears at first sight to be but poorly adapted to compete with grasses already existing in a sward. The fact that, despite these handicaps, this weed can establish and multiply so as to suppress even the grasses is, however, unfortunately only too evident on the farm of Mr. R. A. Hall at Kaipara Flats.

Although tutsan has probably been present for many years, it certainly was in no way conspicuous. Recently, however, it appears to have adopted infiltration tactics and to have become much more aggressive, so that Mr. Hall and some neighbouring farmers have become concerned lest they may have awakened to the danger rather too late.

Tutsan (*Hypericum androsaemum*) is somewhat similar to its better-known relative St. John's Wort, and is common to both the North and the South Islands. Its height ranges from a few inches to several feet. It can be easily identified by its egg-shaped leaves, which grow in opposite pairs close to the main stem, and by its conspicuous, bright, yellow flower. The seeds are contained in a berry rather like a black currant, and although extremely minute are produced in incredible profusion. The fact that tutsan is rejected by stock is also an important factor in its speedy establishment.

On flat or easy country where cultivation is practicable, tutsan is not likely to give cause for very serious concern, particularly if the sward is kept tight and vigorous. On rough, untopdressed country, on the other hand, where cultivation is impracticable and where the sward is thin and poor, tutsan infestation on a large scale is extremely difficult to combat.

Methods of Control

Grubbing up by the root is effective, but is generally impracticable where infestation is heavy or where cultivation is difficult. As tutsan recovers quickly after cutting and is a perennial, scything is not a very effective method of control. Repeated cutting will, however, prevent seeding, and this method is effective in stopping the pest from spreading over clean parts of the farm. Spraying with sodium chlorate has not so far proved very encouraging, but further trials, both with a sodium chlorate spray and with a flame thrower, are at present in progress, and it is hoped that more detailed information concerning the most satisfactory methods of control will thus become available.

A typical patch of tutsan in the early stages of growth. The flowers and some old seed berries are clearly shown.

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Although the past history suggests that tutsan is not likely to become a major weed problem in New Zealand, the experience of Mr. Hall and several neighbouring farmers clearly indicates that some elements of risk may indeed exist, and where only a few plants are found growing on a farm the wisdom of destroying them while the job involves only a few minutes' work cannot be disputed.

With tutsan, as with many other weeds, prevention is easier than cure, and one year's seeding, if neglected, may ultimately entail the proverbial ten years' weeding.

—P. S. SYME, Instructor in Agriculture, Warkworth.

Part of tutsan-infested hillside. Note how this tutsan is suppressing even the grasses. Mr. Hall states that a year or two ago this was practically clean ground.

Pasture Establishment on West Coast

THE gradual adoption by some of the more enterprising young farmers of the West Coast districts of the practice of sowing a short term temporary pasture on newly cleared land is producing results providing a striking contrast to the dismal failure of most pasture sowings on those areas first cleared by machinery.

A typical case illustrating the results obtainable from a sound policy of improvement is provided on the farm of Mr. F. Wyatt, of Hari Hari, and in view of the reluctance of many farmers to renew worthless grazing on the score of cost, the figures supplied by Mr. Wyatt are interesting.

An area of 15 acres of rough grazing country after being cleared of logs was ploughed and sown down with 25 lb. Italian rye grass and 5 lb. red clover per acre, 5 acres being sown in the autumn of 1941 and the remainder in the following spring. The cost of cultivation, seed, lime, and fertiliser amounted to £60 for the 15 acres, but the extra feed available this season resulted in an increase of 2000 lb. of butterfat from the herd over last year, in spite of a less favourable season and with two cows less being milked. Thus the outlay on a highly productive pasture is considerably more than repaid in the first year.

On account of a misunderstanding certified Montgomery red clover was sown instead of broad red in the first five acres, but Mr. Wyatt is satisfied that the superior grazing capacity of this area amply justifies the seeming extravagance of employing Montgomery red in a temporary pasture. Cheap seed buyers please note.

—A. D. MERCER, Field Instructor, Greymouth.

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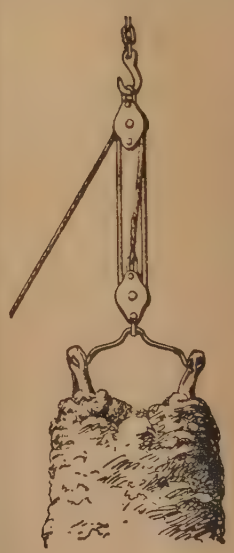

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Radio Broadcasts

RADIO talks to farmers will be given from Station 1YA Auckland at 7.15 p.m. on the following dates:—

June 29.—"The Root Crop for Supplementary Fodder"—Mr. C. R. Taylor, Fields Instructor, Rotorua.

July 6. — "Seasonal Notes"—Fields Division.

July 13.—"Seasonal Operations for the Orchard"—Mr. A. T. Douglas, Orchard Instructor, Auckland.

July 20.—"Growing of Onions"—Mr. A. V. Allo, Instructor in Agriculture, Tauranga.

Pig Industry Broadcasts.

UNDER the auspices of the District Pig Councils concerned broadcasts will be delivered in July as follows:—

1YA Auckland, July 16, 7.15 p.m.—"Treatment of Pigs after Weaning," by A. Longwill, Supervisor, Auckland District Pig Council.

2YH Napier, July 19, 7.30 p.m.—"Weaning to Four Months Old," by J. H. Owtram, Supervisor, Tairawhiti District Pig Council.

2YA Wellington, July 7, 7.35 p.m.—"Fitting Pigs to the Feed Supply," by C. H. M. Sorensen, Supervisor, Taranaki District Pig Council.

3YA Christchurch, July 16, 7.15 p.m.—"Crops for Pigs," by H. W. McIntosh, Supervisor, Canterbury District Pig Council.

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ONE million tons of straw can be given the feeding value of 500,000 tons of cereals by a new pulping process which is the latest contribution of agricultural science to Britain's food-growing campaign.

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Livestock can normally utilise only from one-half to one-third of the nourishment in straw, chaff, or cavings, but pulping makes these materials palatable and doubles or trebles their breeding value. Thus, each ton of straw yields 3½ tons of straw pulp, and 100 lb. of straw pulp, whether from wheat, barley, or oat straw, has the feeding value of 9 lb. starch, 11 lb. maize, 12½ lb. barley or rice meal, 15 lb. oats, 15 lb. dried sugar beet pulp, 1,200 lb. mangolds, or 130 lb. swedes. Balanced up with a suitable protein food such as ground-nut cake, it is relished by fattening or growing cattle, dairy cows, or lambing ewes.

The pulping can easily be fitted into the farm routine, one ton of straw requiring only 10 man-hours' labour, 180 lb. of caustic soda, and 6,000 gals. of water.

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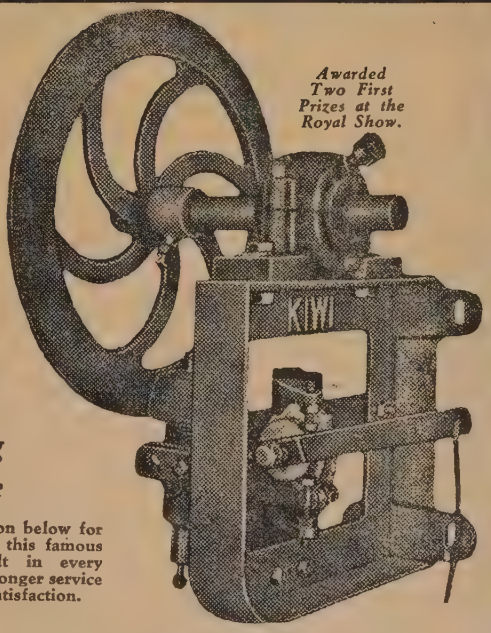

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Orchard Notes

Pruning of Pip Fruits

THERE are many points to be considered in the pruning of both apple and pear trees, largely depending upon the age and condition of the tree. Each tree presents its own pruning problem which should be studied carefully. For instance, where the growth made during the previous season has been small, pruning will vary considerably from that undertaken where heavy, strong growth has been made. There is a close relationship between growth and fruiting in that fruiting generally decreases with heavy and excessive growth, and increases as the tree settles down to maturity. Therefore, an effort should be made to produce balance between growth and fruit to maintain good fruiting wood throughout the tree, at the same time showing a good average growth.

The vigour of the tree is largely dependent upon its leaf surface, and pruning should be done to provide and maintain an adequate supply of large, healthy foliage without which neither good growth nor fruit can be obtained.

Permanent or Temporary Woods

In the early stages of forming the young tree, consideration must be given to the permanent wood or that wood which will remain in the tree, as leaders, or main branches, and the heavier branches coming from the leaders. Temporary wood which is generally removed to make room for renewal wood consists of the laterals and fruit spurs, arising from the permanent limbs. The aim of the pruner should be to build up the permanent parts so that when the time arrives for the temporary wood to bear fruit the tree will be sturdy and capable of bearing any strain that might be caused in the carrying of the crop. No variety, irrespective of strength, should be allowed to bear fruit until the permanent wood is well established.

The number of leaders required will be influenced to some extent by the climatic conditions of the district, the class of soil, and the variety of tree planted. Results to date from the modified leader system give reason to believe that more growers will adopt this system in the future. It is claimed that by this system more space is available between the leaders for the development of fruiting wood, a better quality fruit is produced, and the trees carry as much fruit as those with a larger number of leaders.

In pruning young trees the objective should be to produce a strongly framed tree with the leaders spaced as equally as possible. The centre of the tree should be kept open and the leaders designed to maintain growth and to enable them to carry the weight of fruit in future years. If spaced properly there will be sufficient room between the leaders for the development of fruiting arms and laterals. As the tree develops fruiting arms should be encouraged to grow from the leaders as far as possible in a horizontal direction. Along these arms are borne the laterals and spurs on which the fruit is carried.

Laterals and Fruit Spurs

As the permanent parts of the tree become established attention should be given to the training of temporary parts. Laterals and fruit spurs will develop along the fruiting arms. On these laterals and spurs in due course the fruit is produced. It may possibly be found that there are many more laterals than are required for fruit production in any one year; those not required should be removed entirely to make room for further laterals in the future. Laterals and fruit spurs as they become old and worn out should be removed entirely. To maintain growth and vigour the leaders should be pruned every year. Difficulty may be experienced with some varieties especially if dealing with a fully matured tree, but by a careful process of elimination good results will be obtained in a comparatively short time.

New Plantings

Where the soil is in suitable condition, planting can be done during the present month. If the soil is too wet, the operation is better delayed until the spring when the soil is dry and warm. All bruised and broken roots should be removed when planting. A sufficiently large hole should be dug to accommodate the roots when spread out and a light dressing of manure should be incorporated in the soil around the newly planted tree. Prune the young tree before planting, bearing in mind the class of tree it is intended to grow.

Cultivation in the Orchard

The ploughing of the orchard, where not already done, should be undertaken to enable the soil to receive the benefits derived from frost and rain during the winter months. All green crops should be turned under to allow for complete rotting before the spring.

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This is also an opportune time to attend to any drainage required in the orchard.

The overhaul of the spraying outfit in preparation for next season's operations can be given attention on wet days which may occur during the month. Breakages during the past season should be remedied and the renewal of worn-out parts attended to. In fact, everything should be done to save unnecessary delay when the spraying season begins.

—G. STRATFORD, District Supervisor, Horticulture Division, Dunedin.

Citrus Notes

Handle Fruit With Care

THE forms of wastage observed in lemon depots have been: Collapse, frost injury, green-mould, blue-mould, stem-end-rot, brown-rot, oil-rot, petica, citrus-blast, scour-rot, red-blotch and Alternaria rot.

"Collapse" is the total break-down of lemons which are picked in an over-mature condition, wrapped and packed and held too long before the case is opened. This condition occurs most often at mid-summer. The lemon, even after picking, is still living—taking in oxygen and giving off carbon dioxide. At times of high temperatures and high relative humidities, this rate of metabolism, as it is called, is increased. If therefore lemons are harvested too mature and when metabolic processes are at a maximum, as at midsummer, then they may collapse completely before reaching the retailer.

Frost-injury causes more loss annually, even after harvesting, than is often realised. Many fruits appear sound but are partially dry; others are weakened and are more susceptible to weak fungi which would otherwise cause no damage. As much of the crop as possible should be harvested before frost-damage occurs, and after such frosts only sound fruits should be forwarded. If part of the orchard is affected, the fruits from the frosted trees should be picked separately and labelled "for peel purposes only."

The effect of frost on lemon fruits.
[Photograph by I. Nottage.

Results of Injury

Green-mould, *Penicillium digitatum*, is the best known storage decay in citrus fruits. Control consists in the reduction of injury and the reduction of spore-load in the atmosphere of packing depots. Only injured fruit will decay with green-mould, but the injury may be microscopic. Every care should therefore be taken to keep fruits as free from injury as possible.

Stem-end rot is due to the same fungus, *Phomopsis citri*, as causes melanose in the orchard. The Bordeaux sprays applied to prevent melanose developing will reduce stem-end-rot in the curing and packing sheds.

Citrus-brown-rot sometimes causes severe losses in curing depots. Therefore every precaution must be taken to prevent infected fruit being forwarded to curing and packing depots where it is likely to infect fruits otherwise sound. To check brown-rot the autumn 3-4-50 Bordeaux is essential. (See Citrus Notes for April, 1942.)

Oil-spot or *Oleocellosis* is due to oil in the rind of citrus fruits being liberated and acting on the neighbouring tissues to produce a slightly sunken appearance between the oil glands. It occurs chiefly on lemons. To prevent oil-spot blemish the picking of dark green lemons when wet and all treatment likely to cause surface abrasions should be avoided.

Waste After Packing

In tests made with New Zealand lemons after packing, it has been found that the average waste ranges from ½ to 1 per cent. per day from the time of packing. This waste has generally been caused by green-mould, collapse, or stem-end-rot, and to reduce this waste every precaution should be taken to prevent the fruit being injured.

The standard packages for citrus fruits are the bushel No. 1, 10½ x 11½ x 18 in., inside measurements; the half bushel No. 5, 8½ x 7 x 18 in.; and a quarter bushel No. 7, 6 x 9 x 11 in. The flat half bushel 5¼ x 10½ x 19 used by some growers for packing Meyer lemons and mandarins is not a standard case and its use must be discontinued.

The branding on the ends of these standard packages is as follows:—

Bottom left-hand corner, registered mark or number. *Bottom right-hand corner*, count, grade and the kind of fruit, such as: Meyer lemons, oranges, marmalade or New Zealand grapefruit. Marmalade fruit artificially coloured by ethylene or other colouring process must also bear the brand "Artificially coloured" on the package. These details should all be in ⅜in. block type.

Inspection fee stamps must be affixed to packages of Meyer lemons and also lemons sold direct to consumers at the orchard and lemons sold under arrangement with the Internal Marketing Department in districts where there is no depot. A penny stamp is required for the bushel case and ½d. for half bushel cases.

Growers of New Zealand grapefruit should brand the words "N.Z. Grapefruit" only on cases of tree-ripened fruit of good colour and good edible quality and flavour, and in most localities this fruit will not be ready before August. Other fruits should be branded "Marmalade" and be tree coloured, of uniform maturity and colour.

—A. M. GREIG, Citriculturist, Auckland.

Guide for the Home Garden

Use of Animal Manures

"I like to see a man proud of the place in which he lives: I like to see a man so live in it, that his place is proud of him."—Abraham Lincoln.

THE probable scarcity of fertilisers —organic and inorganic—may be the means of directing more attention towards the use of animal manures on the home garden. The plant food value of these manures may not be generally understood, and unfortunately, instead of being used, as they might be, are too often discarded.

This neglect of animal manures in the home garden may be due to any or all of the following reasons:—

1. Neglect of proper care by storage or composting.

2. Lack of appreciation of the true value of these manures on the vegetable garden.

3. Failure to obtain the best results through wrong methods of application.

Pre-application care of animal manures which may be produced on the farm is necessary to prevent loss of the valuable plant food which they contain. To enable the value of these manures to be more fully appreciated, the approximate analysis of a few of them, insofar as they affect vegetables, may be stated as follows:—

Manure.	Organic Matter.	Nitrogen.	Phosphoric Acid.	Potash.
Horse	.. 470	9-12	8	2-9
Cow	.. 327	4-10	2- 4	1-2
Sheep	.. 700-1,000	12-16	6- 7	3-4½
Pig	.. 220-400	9-16	2-13	3-8
Fowl	.. 660	18-36	11-13	13-20

"Complete Fertilisers for Farm and Orchard," by J. C. Brunnich.

The low phosphoric acid content of cow manure, and the relatively low quantity of potash contained in horse and cow manure, should be particularly noted.

If these manures are applied to the garden in any appreciable quantity, without the addition of superphosphate and potash in some form, it is easy to understand what will take place in plant growth. Through the excess accumulation of nitrogen that will ultimately be transformed into a condition in which it will be assimilated by the plant, an unbalanced state of fertility will be created, and plants, lacking in constitution and vigour will be produced. Such plants are easily affected by disease, and the infestation of the soil which invariably follows will bring further trouble to the home gardener.

From the above analysis it should be noted that the animal manures referred to may, within reasonable limits, be termed "complete" manures, in as much as they contain the three foods which vegetable plants, with the addition of lime, require in greatest quantities. It would therefore appear that to maintain a state of fertility which will produce balanced plant growth, superphosphate, and potash must be applied to the soil when animal manures are used.

In addition to plant foods, animal manures are a valuable source of organic matter which constitutes the basis of all humus in the soil.

When In Trouble

When results from growing your own seeds and growing your own plants are unsatisfactory and you are worrying over the probable cause, why not consign your troubles to the Director of the Horticulture Division, P.O. Box 3004, Wellington? He may be able to assist you. Write him now.

GOLDEN ACRE CABBAGE.

Mid-July is the time for sowing seeds of this desirable variety of summer cabbage. It is a moderately sized, round, compact headed cabbage of the Copenhagen Market type, is short stemmed, and when cut young has few large outside leaves.

The seed should be sown in boxes, and, unless it is intended to transplant the young seedlings before setting in the garden, the boxes must not be less than six inches deep. The seed should be sown in rows, and for sowings made during this season of the year it is better to allow three inches between them. If unsterilised soil is used, and as soon as the young seedlings appear it is particularly necessary that the soil between the rows should be kept well stirred. This will assist in preventing an outbreak of damping off which might result in the destruction of the entire box of plants.

Should it appear that, with subsequent growth, the seedlings will be overcrowded in the box, they are best thinned out, and if desired, the thinnings may be transplanted elsewhere. Thinning out the plants, as suggested, will lessen the danger of attacks of mildew which may be recognised by the appearance on the plants of a grey, slimy mould which renders them unfit for setting in the garden.

LETTUCE.

Early sowing of lettuce seed, if not already made, should be attended to without delay. Webb's Wonderful and Success are recommended varieties.

PEAS.

In a sheltered part of the garden, and in good fertile soil peas may be sown now. When these conditions do not obtain, the ground should be dug deeply and thrown up roughly so that it may receive the full benefit of exposure to frosts and severe weather. When, ultimately, the soil is being prepared for sowing, it will more easily be reduced to a fine tilth suitable for receiving the seed, and for subsequent growth.

In order to ensure some measure of stability for the young plants, the seed should be sown in a shallow trench which may be made with a hoe. Sow

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What To Do In The Garden Next Month

Summary of Operations During July

VEGETABLE SECTION.

Successional Sowings.—Nil.

SEEDLINGS TO TRANSPLANT AND PLANTS TO SET.

Except in warm localities seedlings should only be transplanted under glass.

Generally, it is too early to set plants out in the open.

Potatoes.—Only in frost-free districts.

Lettuce.—If not already attended to, seed should be sown without delay.

Cabbage.—Sow seed of Golden Acre mid-July and transplant when 6 inches high.

Cauliflower.—Plant out seedlings in August or early September.

PERENNIAL CROPS.

Rhubarb.—All crowns should now be planted out and well fertilised for the coming season.

Asparagus.—If not already done, the beds should be attended to as early as possible. Remove all top growth that has completely died and give ample supplies of cow or fowl manure with plenty wood ashes.

CROPS IN SEASON.

Greens.—Sow seed of spinach, July, August; silver beet, August.
Cauliflower.—July onwards. Lettuce—July and successional sowings.
Endive.—July, August. Spinach—July onwards.
Roots.—Carrots, July—successional sowings.
Turnips and radish.—All seasons.
Broad Beans.—July—final sowing.
Peas.—July onwards.

---

the seed at the rate of four to the foot and thin to six inches apart. Press the seed an inch into the soil and cover with a mixture of 2 parts of sieved soil and one part sharp sand. Along the trench, throw a few handfuls of burnt lime. This will prevent the birds from digging for the peas, and subsequent applications will protect the seedlings from destruction by slugs and snails. The trench should not be filled in after planting the seed. This will be done when cultivation is being attended to.

A suitable fertiliser for peas may consist of blood and bone, 2 parts superphosphate, 1 part, by weight, mixed before applying. Best results are likely to be obtained if this mixture is applied 10 to 14 days before planting the seed. A trench should be opened and the manure scattered along it at the rate of 6 ozs. to 15 feet of row. Before raking the soil over, a peg should be placed at either end of the trench, so that it may be opened again in the same place. When the young plants appear no hesitation should be made in applying burnt or hydrated lime to prevent slug damage. This is best applied in the evening and will not injure the young plants. Varieties recommended for early sowing are Earlikrop, Utility, and W. F. Massey.

TURNIPS.

A small sowing of these may now be made. They should be used as soon as convenient sized bulbs have developed. All that may be necessary by way of fertiliser is a light dressing of superphosphate.

CARROTS.

In view of the attention which is being paid at present to this particular crop, the first favourable opportunity should be taken advantage of to make an early sowing of seed. If the proposed site is low-lying or badly drained, it would be an advantage to make up a raised bed in which to sow the seed. This will provide the necessary drainage, assist in the early warming of the soil, thereby contributing to quicker germination and earlier maturity, and will prevent the seed from rotting through excessive moisture in the soil. Successional sowings may be made and the roots used when young.

It is frequently stated that young carrots are a more valuable food than older carrots. The same manurial treatment as for turnips is recommended. Varieties recommended are: Earlykrop and Market Garden.

Seasonal Don'ts

Don't

neglect to mix a handful of superphosphate with every bucketful of potting soil. Most soils are deficient in phosphates, and the phosphoric acid—which is the plant nutrient content of superphosphate—will, by stimulating root action, be a first aid to seedling growth.

Don't

overlook or underestimate the necessity of sterilising potting soil, or soil to be used for seedling boxes.

Don't

be in a hurry to sow seeds of late summer and autumn maturing vegetable varieties. When seedlings are produced too early they are hard to "hold" until the proper time for planting.

BROAD BEANS.

These thrive best in a good, heavy loam soil, well drained and rich in organic content. The seed should be sown in "staggered" rows, 2 ft 6 ins. apart. In a shallow, flat-bottomed trench, the seed is best placed 3 to 5 inches apart, in a zigzag manner; this is what is meant by "staggered" rows. When the plants have attained a height of 6 inches, the soil should be drawn towards them to afford support. At three feet high the top 3 inches of the plant may be removed. This will induce early maturity of the crop.

BEETROOT.

A small sowing may be made at any time when the soil is in suitable condition. Successional sowings should follow at suitable intervals as required.

CRESS.

Cress (*Lepidium Sativum*) is a popular European salad plant. It is an annual, one of the best for early salad use, and is easily grown. It will grow well in a moist, fertile soil. Good fertility is necessary to produce crisp leaves. It is not recommended as a summer vegetable. It can be sown now, but from sowings made in early

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spring good cuttings may be obtained in from four to five weeks after sowing. In vitamin content it compares favourably with lettuce.

RADISH.

Seed may be sown almost any season of the year, and as an addition to cress will be useful as a salad. For early sowing select a sheltered part of the garden with a sunny aspect. Long Scarlet is the variety recommended.

It is not suggested that cress or radish might take the place of varieties that may be considered of greater domestic utility value.

Generally, the physical and economic value of vegetables is now recognised as never before. This is due, in the physical sense, to the continuous propaganda of food nutritionists and especially to the influence of many eminent nutrition authorities, among whom is Sir John Boyd Orr, of Great Britain. Economically, home-garden vegetable growing will at all times amply repay the labour expended on it.

Admittedly, justifiable encroachments on the spare time of most home gardeners will limit to a very considerable extent efforts to produce the vegetable requirements for the home. Despite this handicap, however, and in view of national contingencies which may arise, it is suggested that every opportunity should be taken advantage of, to maintain—as far as practicable—maximum vegetable production in the home garden.

The aim should be, not large plantings of any one variety, but rather small successional sowings of seeds for the production of immediate requirements, until the time for main crop preparations. The principles involved in successful crop rotation should be studied.

It is not considered desirable that tomatoes and potatoes should follow one another on the same piece of ground. Neither should a crop grown for root production be followed by crops which may be similarly used. Thus carrots should not succeed parsnips, turnips, or beet. And lastly, crops which occupy a part of the garden for a long time should be followed by quick maturing varieties.

In planning the garden for next season's operations, it is not only desirable, but necessary, that the foregoing remarks should constitute the basis of the lay-out. Judicious crop rotation will go a long way towards, if not prevention, at least amelioration of many garden troubles.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

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Seasonal Work for Beekeepers

Winter Feeding

THE past season for beekeeping in New Zealand as a whole has been one of the worst for twenty years, with honey production down by approximately two-thirds of a normal crop. In some areas insufficient honey was gathered by the bees to provide adequate winter stores; consequently it has been necessary for many beekeepers to feed sugar syrup to make up the deficiency.

At least thirty to forty pounds of honey are required to winter a colony of bees successfully, according to location, and where it is necessary to supplement with sugar syrup, the work should be completed before the bees go into their winter cluster.

No attempt should be made to feed liquid syrup to colonies during the cold winter months, as the bees are then unable to take up and evaporate the syrup in the ordinary way. Individual bees soon become chilled, and eventually die if exposed to low temperatures. Within the colony cluster they attempt to maintain a temperature varying from 75 to 85 deg. Fahr. during the winter period, when brood-rearing is not in progress. The required heat is created by the consumption of food and by muscular activity of individual worker bees within the cluster. All winter stores should therefore be made available to them in a readily accessible place, and should be suitable for immediate consumption.

Where there has been insufficient honey gathered for the normal requirements of the bees, and the beekeeper has failed to make up the deficiency by feeding sugar syrup during the late autumn, all colonies thus affected may now be given hard candy to help them survive the cold winter months.

A suitable candy for this purpose may be made by pouring white granulated sugar slowly into a pot of hot water on the stove, until the syrup is very thick and the sugar is all dissolved by constant stirring, before boiling begins. Boiling should continue very slowly until a few drops of the candy, quickly cooled in cold water, are hard when taken out, but when placed in the mouth soften slightly. At this stage the candy should be poured into shallow moulds of waxed paper, and when nearly hard it may be creased with a knife so that it can be broken into suitable sized squares for use when hard. A good size cake of candy may be placed over the winter cluster of each hive.

In northern districts, where the winters are mild and short, and where the bees fly on all fine days, feeding with candy may be unnecessary.

Sugar Supplies: To obtain reasonable supplies of sugar for beekeeping purposes where required, registered beekeepers must now apply on Form F.R.5 to the nearest Rationing Controller (Postmaster), who will refer all such applications to the Apiary Instructor for the district.

—T. S. WINTER, Senior Apiary Instructor, Wellington.

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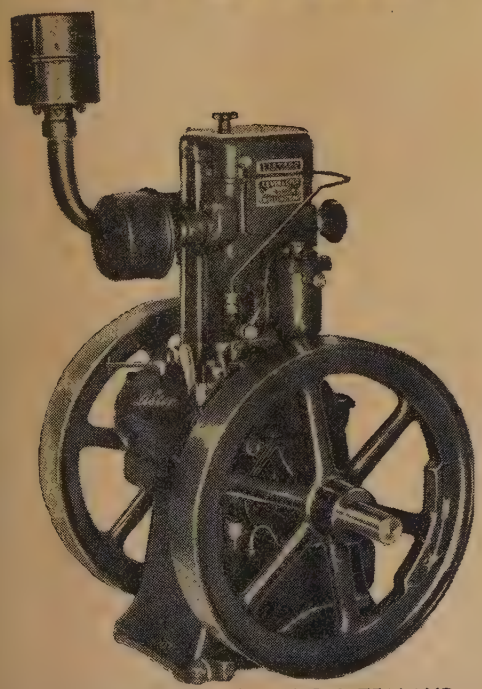

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AGENTS THROUGHOUT NEW ZEALAND.

Theory and Practice of Feeding

PART III.

(continued)

By F. C. BOBBY,
Superintendent of Poultry Husbandry,
Wellington.

A. ADULT STOCK

THE practical aspects of the feeding systems, commonly referred to as wet mash and grain and dry mash and grain, together with a combination of these two systems, were discussed fully in the April issue of this "Journal."

A further system known as soaked grain feeding is also worthy of discussion. This system has attained popularity in Australia, while a number of New Zealand poultry keepers have proved its worth in this Dominion. Apart from the fact that it is an excellent alternative at times when bran and pollard are in short supply, it has proved in practice to give most satisfactory results with laying pullets and breeding hens.

The grain advocated for use with this system is wheat, which should be thoroughly immersed in water for a minimum of twenty-four hours. It is of considerable practical value to use a metal or wooden vessel with a tap inserted at its lowest level, as this enables surplus water to be drawn off easily at the end of the period of soaking. To this soaked wheat may now be added 8-10 per cent. by weight of meatmeal and 2 per cent. minerals—the whole being thoroughly well mixed at this stage.

Added Meatmeal

The amount of meatmeal added will depend upon the season of the year and the class of laying bird to be fed. For instance, 8 per cent. meatmeal will be sufficient protein supplement for pullets on the point of lay and for breeding hens, while during the winter period this amount may be increased for pullets with advantage. The minerals recommended are equal parts by weight of common salt and limestone flour or alternately just 2 per cent. limestone flour.

Having thoroughly mixed in the meatmeal and minerals the wheat should now be partially dried off by mixing in 10 per cent. by weight of bran. The mixture is thus rendered palatable for the birds, who will consume it without trouble. For every 100 lbs. **dry weight** of this mixture the formula is as follows:—

Wheat	80 lbs.
Bran	10 lbs.
Meatmeal	8 lbs.
Minerals	2 lbs.
	100 lbs.

It has been found in practice that approximately eight pounds of wheat (dry) per 100 birds is required at each of two meals daily. These two meals are given, one in the early morning and the other as a last feed late in the afternoon, while a light feed of about ½-¾ oz. per bird or 3-3½lbs. per 100 birds of dry or hard grain should be fed at midday. Barley, maize, wheat or a combination of these grains may be used for this feed.

The object of this additional grain feed is to ensure that the muscles of the birds gizzards are exercised to the full, thereby preventing these muscles from becoming flabby. This loss of muscle strength occurs where only soft or softened food is fed. Once the gizzard muscles are allowed to deteriorate and become flabby, digestive troubles may follow.

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Sprouted Grain

The subject of soaked grain feeding cannot be dismissed without reference to sprouted grain, which in this case means soaked wheat that has just started to grow. The wheat is soaked, drained of all surplus water and turned over to allow the air to enter. After this and if the temperature is suitable the germ will start to grow after approximately 48 hours.

It has been claimed that such wheat has greater feeding value for laying birds than plain soaked wheat. Conclusive scientifically-controlled experiments have yet to prove this contention, while as a system of feeding it is apt to break down in winter when average temperatures are too low to induce sprouting readily within a short period of time.

B. CHICKENS.

It now remains to discuss systems of feeding as applied to young chickens and growing stock. As would be expected, the systems employed are similar to those used for adult stock, although the methods of applying them are modified according to the age of the birds concerned.

It has already been stated most emphatically that feeding is not a mechanical job. If this is true of adult stock feeding it is equally true where chicken feeding is concerned. It is a fundamental principle of chick-rearing that the young growing birds **must not** suffer a check in health and growth if the best constitutioned birds are to be reared.

It follows, therefore, that steady and normal food consumption is essential throughout the growing stage from a day old to the mature bird. For this reason it is advisable to select a system of feeding during the rearing that will be employed when the birds reach maturity. Any marked change in system, just as any sudden change in the mash fed, may lead to a fall in food consumption and in consequence a check in growth or development.

Of necessity the system of feeding chosen will be influenced by the method of and equipment used for rearing, but the majority of poultry keepers may be said to be using a combination of the dry and wet mash systems with the addition of grain. A number use dry mash and grain only, which system is carried right on when the birds reach maturity. On the other hand those who favour wet mash and grain feeding for their stock usually make use of dry mash feeding for a few weeks during the early stages of rearing.

Grain and Mash

Poultry keepers vary in detail as to their methods of employing grain and mash feeding for chickens, but the method here described may be said to have stood the test of many years of practice.

On arrival at a brooder day-old chicks will normally benefit from a complete rest and should therefore receive their first feed after a night's rest.. On the other hand these chicks do require water right from the start, and in cold weather this water should not be stone cold, but have the chill taken off it—at least for the first 48 hours.

A word of warning must be given here. When a poultry keeper buys day-old chicks and these have travelled a considerable distance, then it is advisable to give them their first feed soon after being placed under the brooder.

The first feed should consist of fine chick grain, usually referred to as No. 1 Chick Feed or Day-old Chick Feed. Small quantities are placed on small boards or stiff paper near the brooder and the chicks attracted to this feed by gently tapping the board or paper. With this chick feed should be given a fine grade hard grit. The grain is hard and the chicks require a hard grit in their gizzards right from the start if this grain is to be properly and easily digested.

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Little and Often

The secret of successful feeding at this early stage is summed up in the phrase—a little and often. Thus this chick feed should be given five times daily at regular intervals for the first five or six days—care being taken **to remove** any grain which has not been eaten up within twenty to thirty minutes. Since boards are being used, this is possible.

All too often poultry keepers feed too much grain at any given meal and then fail to remove the surplus. In this way the young chicks become surfeited with food and lose their normal keen appetite. It should be the aim of the chicken feeder to have the chickens "come up hungry" for each meal.

From the fifth or sixth day onwards the chickens will require a chick mash which may be supplied as dry mash in a suitable sized hopper. As with adult stock, it is essential to see that the dry mash hopper space is adequate for the number of the brood and according to their age. The following figures may be taken as a guide in this matter:—

Feeding Space

For 100 one-week-old chickens a dry mash hopper with single-sided feeding space should be 8 ft. long. For four-week-old chickens it should be 12 ft. long. If hopper is double-sided, then halve these lengths.

There are two methods of feeding this dry mash. Many poultry keepers maintain a full supply of mash in hoppers before the birds all day; giving in addition three feeds of grain—in the morning, at midday and in the afternoon. While this method will give satisfactory results and involves the minimum of labour, it cannot be said to constitute controlled feeding, for which there is much to be said where health and constitution are fully considered. Where time allows the following method of feeding is strongly recommended after the first week.

Early morning—chick feed.
After breakfast—open up the dry mash hoppers.
Midday—close hoppers and give small feed of chick feed.
About 3.30 p.m.—grain feed and open up dry mash hoppers.
Last visit—close hoppers.

This method allows the chickens a rest between feeds, while giving them ample opportunity for getting a full feed before the long night period.

It may be noted that, after the first week, chickens may be fed with grain in the litter and not on the boards as hitherto. Skill is now required to feed enough grain but not too much, as indicated by a surplus left in the litter between feeds. Furthermore, where controlled dry mash feeding is practised it is essential to give adequate hopper space, since without this the weaker or more timid chickens will be underfed.

Obviously, for those intending to continue with dry mash and grain feeding, the system is carried right on—only the composition of the mash and the size of the grain being altered as the age of the birds increases. After a month of age the midday grain feed may be dropped and the grain given should be Chick Feed No. 2.

Where it is intended to practice wet mash and grain feeding the change-over may be made during the fourth week of rearing. This change should not be too sudden. Increase to two wet mash feeds daily and gradually decrease the length of time during which the dry mash hoppers are open until they may be removed altogether. The amount of wet mash fed should be gradually increased as the dry mash consumed decreases.

Amount of Food

It is difficult to supply exact figures for food consumption—in fact success in feeding correct quantities depends upon the practical experience of the chick rearer. Nevertheless it is possible to quote a set of figures that may act as a guide in assessing the bulk of food required by any given number of chickens at any age during rearing.

The following table is the average food consumption of White Leghorns per 100 birds:—

Age.	Total Food Consumed. Lbs.
0- 4 weeks	1
5- 8 „	2½
9-12 „	3
13-16 „	3¾
17-20 „	4½

Total for 5 months is approximately 15 lbs.

These figures include grain and mash, but not green food. As with adult stock, grain and mash should be fed approximately in the proportions of half and half by weight after the first week. Some latitude may be exercised when the growing pullets are on free range, since an experienced feeder will increase or decrease the quantity of grain fed according to the state of maturity of the flock. If maturing quickly sexually without adequate body size and weight, the grain may be increased at the expense of the mash with advantage.

No reference has been made to green feed for chickens. This is an essential and must not be neglected whatever the system of feeding adopted. It is emphasised, however, that this green food should be young, succulent and free from woody fibre. Cut up finely, according to the age of the chicks receiving it, a good daily feed placed in troughs is desirable.

Once again let it be noted that chickens **must never be short of fresh water**, while grit is another essential at all ages.

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Federation of Young Farmers' Clubs

Annual General Meeting of the Federation

DELEGATES and members generally are reminded that the eighth annual general meeting of the N.Z. Federation of Young Farmers' Clubs will be held on Wednesday, July 1st, 1942. The meeting will be held this year at Dunedin.

The annual meeting consists of the members of the Dominion executive committee and the members of all four councils. All of these have voting power. All members are invited to attend and take part in discussion, but only the members of the bodies mentioned are entitled to vote.

The annual meetings of the four councils have been held at various centres, and some interesting remits and recommendations have been submitted for discussion at the annual meeting. In view of the present situation, discussion on the immediate and future policy of the Federation will be one of the important items on the agenda.

The annual general meeting will commence at 10 a.m. A meeting of the Dominion Executive Committee will be held beforehand, and will commence at 9 a.m.

Notices of the meeting, etc., will be forwarded to all delegates at an early date.

Address of Dominion Organising Secretary

UNTIL further notice all correspondence, containing or dealing with club reports, club membership rolls, and club district committee and council activities, should be addressed to Mr. S. Freeman, Organising Secretary, Young Farmers' Clubs, **Flock House Station, Bulls.** Letters containing accounts, postal notes, cheques, etc., relative to affiliation fees, Journal subscriptions, stationery, etc., should be addressed, as before, to the Organising Secretary, Young Farmers' Clubs, P.O. Box 3004, Wellington, C.1.

Among the Clubs: Notes on Activities

EASTERN SOUTHLAND.

Five Rivers.—Annual meeting; election of officers. Club decided to carry on with restricted activities. Chairman and secretary to act as an emergency committee and arrange for meetings when convenient.

SOUTH OTAGO.

Clutha Valley.—Annual meeting. Officers elected. Chairman, L. W. Cross; secretary, G. Kleim. A discussion regarding the advisability of carrying on the club's activities resulted in a decision to continue so long as sufficient support was forthcoming. There were 13 members present.

Clinton.—Annual meeting. Officers elected. Advisory president, Mr. J. Murney; chairman, E. Roseveare; secretary, J. C. Mitchell. Club to go into recess for war period.

NORTH OTAGO.

Enfield.—Business meeting; discussion on programme of activities for the year. Annual meeting. Officers elected: Advisory president, Mr. Mulligan; chairman, A. S. Hellewell; secretary and treasurer, J. Buick.

MID-CANTERBURY.

Hinds.—Appointment of A. Davison as secretary, in place of C. Davison. Lecture by Mr. R. Inch, Department of Agriculture, on "Certified Seeds."

NORTH CANTERBURY.

Scargill-Omihi.—Annual meeting. Officers elected: Advisory presidents, Messrs. J. Sloss and W. H. Brown; chairman, H. J. Hamilton; secretary, J. M. McMillan; treasurer, W. R. Elliot.

CHRISTCHURCH.

Ellesmere.—Talk by Mr. T. N. Beckett on "Mountaineering," illustrated by lantern slides.

NELSON.

Moutere.—Annual meeting. Previous year's officers retained with the addition of F. Beuke, as assistant chairman, and C. Heine as assistant secretary. These appointments were made in case the office-bearers were called up on military duties.

Murchison.—Annual meeting. Officers elected: Chairman, D. Downie; C. Peacock, secretary and treasurer, C. Peacock. After the meeting members were entertained at supper by the Junior Branch of the W.D.F.U.

WAIRARAPA.

Alfredton.—Teams selected for district stock-judging competition. Mr. S. Freeman, Dominion Secretary, attended and addressed the meeting on Y.F.C. affairs; he also exhibited sound films of agricultural and general interest.

Carterton.—Team selected for district stock-judging competition at Masterton. Club debate, "That the Women's Land Army in New Zealand will be Successful." Speakers, R. Andrews, M. Renall, N. Hannah (affirmative), J. Staples, R. Card, G. Rayner (negative).

HOROWHENUA.

Levin.—Talk by Mr. R. P. Gilder, Government Veterinarian, on "Stock Diseases"; numerous questions were answered. The attendance comprised 25 active and two advisory members; four new members were enrolled.

MANAWATU.

Bunnythorpe.—The club secretary, A. J. Slack, tendered his resignation on account of taking up a position in the South Island; his resignation was accepted with regret, and the best wishes of the club were extended to him. Macgregor Donald was appointed to fill the vacancy. Films of general interest were exhibited by Mr. Weston-Webb.

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Feilding.—Profit from Y.F.C. Stock Show, amounting to £15, handed to 1942 Patriotic Appeal. Club member elected as representative on the Community Centre Social Club Committee. Ron Beazer declared winner of W. Benson's prize of 10s. 6d. Lecture on "Farm Bookkeeping" by Mr. A. C. Buist. There was an attendance of 10 members and two visitors from Feilding Military Camp.

Rongotea.—Two new members elected; decided to commence meetings at 7.30 p.m. during the winter months. Congratulations were extended to R. O. Gloyn on his re-election as chairman of the Manawatu District Committee. Lecture on "The Butter Industry" by Mr. W. Read.

CENTRAL HAWKE'S BAY.

Onga Onga.—Annual meeting. Officers elected: Chairman, E. S. Bilby; secretary, S. T. Carter; assistant secretary, C. Carr. A discussion on the advisability of maintaining the club with the present depleted membership resulted in a decision to carry on if at all possible, there being a very strong feeling in this direction.

NORTHERN HAWKE'S BAY.

Meeanee.—Business meeting. Report of recent district meeting read and discussed. The annual meeting was held during the previous month, officers elected being as follows:—Advisory president, Mr. S. Parsons; chairman, L. L. Griffiths; secretary, K. H. Bimler; treasurer, W. J. Puddle. The chairman's annual report showed a successful year, despite difficulties, and gave an indication of the members' intention to carry on.

WESTERN BAY OF PLENTY.

Paengaroa.—Annual meeting. Officers elected: Advisory president, Mr. J. B. Cawte; chairman, S. McDowell; secretary, E. A. Marsh; treasurer, K. Conway; Press reporter, I. Spratt. The Dominion President, Mr. D. S. Ross, was present and gave a short address on the activities of the club; he considered that the Y.F.C. movement would still be able to carry on although many activities would, of necessity, be curtailed till after the war. In conclusion, he urged all members to do their utmost to keep the movement alive.

Te Puke.—One new member enrolled. The result of the calf competition was as follows:—P. Nichol 1, P. Fagan 2, R. Mutton 3. The competition was held on March 25, and the awards were made for the best line of calves. A general discussion was held on "Non-Stripping." Officers elected at the annual meeting: Advisory president, Mr. D. Ross; chairman, P. Nichol; secretary and treasurer, D. Vercoe.

EASTERN BAY OF PLENTY.

Waimana.—Annual meeting. Officers elected; Advisory president, Mr. N. J. C. McDonald; chairman, R. White; secretary, T. Doran; treasurer, J. T. Cain. The annual report showed that the club had passed successfully through a very critical year, and was in a sound position financially. The district secretary, Mr. J. R. Murray, was present and gave an address on the Y.F.C. movement. It was decided to keep the club active and to encourage younger members to join. Four new members were enrolled at the meeting.

TE KUITI.

Paewhenua.—Discussion re dance. Committee set up to arrange same. Two new members enrolled. Various members delivered prepared addresses of five minutes' duration. Mr. K. M. Montgomery, district secretary, gave excellent advice and constructive criticism in connection with the speeches. He also spoke on the difficulties confronting the Y.F.C. organisation, and offered suggestions regarding club work and activities; 11 members present. A field day was held at Rangeatia; Mr. R. Love demonstrated the correct method of breaking in a young horse.

WAIKATO.

Tahuna.—Business meeting. Election of new secretary.

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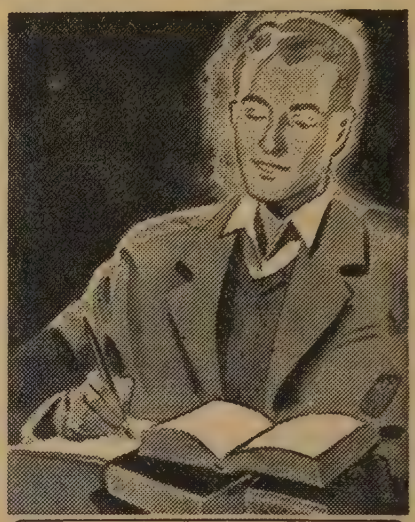

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HE WENT FORTH

ARMY.

Name.	*Club.*
Baker, L.	Waituna
Beazer, R.	Feilding
Bell, L.	Clinton
Bell, R. L.§	Pukengahu
Bennett, C.	Geraldine
Berry, G. C.	Waimarino
Berry, R. H.	Waimarino
Bond, R. H. B.*	Pukengahu
Bright, F. J.	Waimarino
Brown, A. R.	Waimarino
Brown, H. H.	Waimarino
Burgham, J.	Pukengahu
Cameron, L.	Seddon
Carmichael, A. H. C.	Oroua Downs
Clucas, R. N.	Hinds
Conway, F. G.	Seddon
Corskie, J. F.	Blenheim
Crouch, S.	Waituna
Cutler, S.	Feilding
Davies, L.	Taneatua
Davison, L. G.§	Hinds
Dick, A. D.	Seddon
Dunbar, A. G. T.†	Scargill
England, G.	Waituna
Flanagan, D. G.	Mangaweka
Freemantle, J.‡	Onga Onga
Gardiner, D. R.	Blenheim
Gardner, G. S.	Scargill-Omihi
Garnett, T.	Waituna
Gledhill, G.	Waituna
Grammar, R.	Oroua Downs
Goddard, A. W.	Taneatua
Goddard, M. S.	Taneatua
Hamilton, W. A.	Mangaweka
Hammond, G. R.	Waimarino
Hammond, O. D.	Waimarino
Hancock, C.	Feilding
Hills, R.	Feilding
Houlison, L.	Clinton
Hussy, F. W.	Waimarino
I'Anson, K.	Te Puna
Johnston, J. C.	Mangaweka
Johnston, J. M.	Hinds
Jones, E. G.	Waimarino
Kirkland, D.	Taneatua
Langdon, J.○	Taneatua
Lilley, C. S.	Ellesmere
Meads, R.	Waituna
McHay, I. M.‖	Hinds
McKenzie, G.	Clinton
McAlpine, J. A.*	Scargill-Omihi
McKenzie, W.	Scargill-Omihi
McLean, M.	Waituna
Mahan, N. C.	Scargill-Omihi
Marchant, T. G. A.	Oroua Downs
Marshall, R.	Waituna
Maxwell, W. N.	Scargill-Omihi
Mead, Frank D.	Taneatua
Nairn, C. J.	Waimarino
Neal, A. Y.	Seddon
Newton, J. M.	Five Rivers
Nicholson, C.	Waituna
Old, I. H.	Waituna
Paterson, W.	Scargill-Omihi
Revell, L.	Waituna
Roberts, L. M.	Scargill-Omihi
Rubie A.	Waimarino
Shannon, R.	Waituna
Small, J.	Waituna
Sowerby, F.	Waituna
Spillman, K.	Waituna
Stone, A.	Scargill-Omihi
Stonyer, V.‡	Geraldine
Sutton, John*	Waihi
Symonds, H. F.	Scargill-Omihi
Thompson, R. S.	Pukengahu
Tutty, E.	Oroua Downs
Walsh, J. M.	Blenheim
Watt, A. G.	Waihi
Ward, S.‡	Ongo Onga
Whiteside, K.	Clinton
Winters, S. G.	Pukehina
Woisin, V. C.	Pukehina
Yeoman, A. A.	Taneatua

* Killed in action.
† Missing.
‡ Prisoner of war.
§ Wounded.
‖ Died of wounds.
○ Now returned.
♯ Presumed dead.

AIR FORCE.

Name.	*Club.*
Beazer, Ron.	Feilding
Bradley, L. E.	Onga Onga
Bremer, R. L.	Pukengahu
Coe, A. J.	Ellesmere
Durrant, R. W.	Feilding
Foster, O. E.	Scargill-Omihi
Fowler, J.	Waituna
Hamilton, R. A.♯	Scargill-Omihi
Harrison, A.	Scargill-Omihi
Harrison, L. L.♯	Scargill-Omihi
Martyn, Ian	Waihi
McCloy, L. P.	Ellesmere
McLaughlin, D.	Scargill-Omihi
Macale, R. G.	Methven
Martyn, D. C.	Waihi
Pearce, C. R.	Ellesmere
Richardson, D.	Waituna
Robinson, M.	Waihi
Sanders, A. M.	Scargill-Omihi
Shannon, D.	Waituna
Watson, L. M.	Hinds
Withell, E.	Hinds

NAVY.

Cresswell, D.	Waituna
Hopping, B.	Feilding
Morris, L.	Waituna
Toms, D. S.	Mangaweka
Waldergrave, B.	Feilding

Making Old Age Comfortable

Contributed by the
HEALTH DEPARTMENT

WE cannot stop old age. Growing old is one of the surest things about this life, and there's nothing we or anyone else can do about it. The best we can do is to grow old gracefully, to grow old comfortably and pleasantly, and to enjoy to the utmost those years when we take our rest after a full and useful life. Unfortunately many of us are not permitted to grow old just as gracefully and as comfortably as we would like. Nature has a habit of kicking over the traces when we get on a little in years, and sometimes she can kick pretty hard. Generally we are made to pay in a variety of ways for the shortcomings and excesses of our youth, and one of the most common penalties we are obliged to pay is rheumatism.

Rheumatism is one of the ugly companions of old age, one of those unwelcome, unsought impositions which can make life miserable. Every year sufferers from rheumatism spend huge sums of money on alleged cures in an endeavour to banish the suffering and achieve some measure of relief from the nagging pain.

Chronic arthritis, or joint rheumatism, is one of the most common complaints, and is one of the happy hunting grounds for all sorts of quackery. The range of cures offered to a credulous public is extraordinary. All manner of appliances and drugs are skilfully advertised, and yet, how many cures do you really hear about

What is Rheumatism?

What is rheumatism? What is it that causes that sometimes excruciating pain, just like the jabbing of a red-hot needle? Rheumatism starts as a swelling and inflammation of the membranes lining the joint. Later the cartilage of the joint is affected, that is, it becomes roughened and degenerates. The next stage is the wasting of the bones, a process which gives rise to soft outgrowths that you sometimes notice on a sufferer. Also, loose nodules of the lining membranes may get loose in the joints, with painful results, and in the acute stage the fibrous or bony union of the diseased ends of the joint may take place. A crippled joint is the result.

Rheumatism falls into that group of diseases for which no specific cause has been isolated. Reputed causes have been influenced by the dominant trends in medicine, but not one single cause has, so far, been found tenable. Those people who rush eagerly from one alleged sure-cure to another would save themselves a lot of worry and expense and ultimate disappointment if they bore that in mind. What is the alternative?

Now, have you ever thought of letting your doctor look you over and search for any possible cause? It may be caused by septic teeth, or by diseased tonsils and sinuses; again, the cause may be infective. This calls for bacteriological examination. A thorough medical test may just reveal the clue you've been looking for.

Value of Proper Diet

Then there's the question of diet in the prevention and treatment of chronic rheumatic diseases. The study of the problem from this angle has yielded one encouraging fact, and that is the recognition of the importance of vitamins in a well-balanced diet, to maintain the general resistance of the body to rheumatic disease. Thus, a diet of raw vegetables and fruit, nuts, crushed oats, milk, cream, and salad oil—all raw—with the addition of certain cooked foods, such as one egg, two ounces each of meat, bacon, bread, and one ounce each of butter and cheese—all with no salt—has been found beneficial for short periods in the treatment of arthritis. It will help especially those cases where the pain is due to muscle and tissue stiffness and aches, associated with joint trouble.

In the physical treatment of arthritis drugs are of little use except for the temporary relief of pain, and the efficacy of the vaccine treatment has still to be proved. Gold therapy has given promising results. In one experiment gold treatment rendered the disease inactive in 50 per cent. of cases as compared with 5 per cent. of a control group not so treated.

Relief by heat is a common expedient. Heat relaxes the muscle fibre spasm, which is an important cause of pain in rheumatic conditions. The softening and relaxation of the tissues then renders them more amenable to other local measures, such as douching, massage, and manipulation. The use of ultra-violet rays is another form of treatment that has certain advantages.

Remember, however, that your doctor is the person who can help you most, and a thorough test by him may lead to happy results.

Valuable Books for War Funds

SCATTERED about the farm-houses of New Zealand there must be many old books, manuscripts, letters and relics. The value of some are known to the owners, but probably there are not a few farmers who are harbouring treasures unawares. Now is the time for looking out such things, because an appeal is being made for gifts of these kinds to be sold for the patriotic funds.

The movement started in this way. Mr. Winston Churchill sent Mr. Fraser, our Prime Minister, an autographed copy of a valuable book by an ancestor of his. Mr. Fraser has autographed this book and presented it for auction in aid of the funds. Round this book, with its ancient and modern interest, is being built a collection of books, letters, manuscripts, prints and Maori relics, which will also be sold for the cause.

The whole of the Dominion is being organised to get together as many of these articles as possible, and the response promises to be very good.

The local library will receive gifts, or they can be sent to one of the libraries in the larger centres, or to Mr. P. A. Lawlor, P.O. Box 965, Wellington, who is the honorary organising secretary of the movement. Advice will be given gladly, so if you think you have something valuable but are not sure, write and ask.

THE Good Neighbour

BY MARY

From Me To You

LAST month I found in my mail one of the most inspiring letters I have ever received. It came from G.M.B., at Puketapu, and I am going to quote it almost in full, for I know you will derive as much enjoyment from it as I have had.

"I have just been sitting in the garden, surrounded by beauty, sunshine and peace. I have been thinking of the wonderful healing to be found in a garden—how many heartaches are hidden there? I have a sister whose son, a New Zealand Rhodes scholar, is in the British Embassy in Hong Kong. This boy means everything to his mother, for she is alone, and knowing the state of her mind after reading of the horrors of Hong Kong, with the uncertainty as to the fate of her boy, I wrote sympathising with her. And here is her reply: 'Chins up! I am remaking a garden out of a wilderness, and I am so tired at night with the heavy work that I sleep like a top, and put my faith in God. It is such a beautiful world, if only we could live at peace and enjoy it. We must all get back to Nature, and the simple things of life.'" What an inspiring example of courage that mother has set us!

Happiness is an elusive quality—something to be found within ourselves. We all possess the power to be happy, but some of us keep our happiness bottled up inside us, and it does no one any good. Did you ever read that splendid book by Lloyd Douglas, entitled "Magnificent Obsession"? I do not want to tell you here of the story—it would spoil it for you when you come to read the book—but I shall never forget how happy one man in that book was because he gave of his happiness to other people. It is the giving that counts, for happiness is contagious, and its effects are so far-reaching that even the giver herself would be surprised if she could just see how much one action of hers had affected the lives of other people.

When you were young did you read of the Caliph who went searching for happiness? Proud he was and rich he was, but for all his pride and riches he was not happy. "Find a happy man," advised the Caliph's physician, "and wear his shirt. You will don happiness with it." So the Caliph left his Eastern kingdom, and went off in search of happiness. He went through Spain, and through France, through the Lowlands of Belgium, and the Highlands of Scotland. . . And here was a war, and there was a revolution, and nowhere could he find happiness . . . Until he came at last to the green fields of Ireland. A peasant was working in his small potato patch, and was singing as he worked. "A happy man!" cried the Caliph. "I have found him at last! Bring me his shirt!" But alas, when they took off the coat of the poor peasant they found he was so very, very poor that he had no shirt to his back.

I wonder what happened to the Caliph after that? Perhaps he learned a lesson, and went back home rich with the wisdom that happiness is always to be found within oneself, and not without. Possessions do not always make for happiness—it is enough to be enthusiastic about what you are doing—do it with your whole heart and soul, and you will find happiness is yours. After all, as Patrick Chalmers found out, the grand essentials of happiness are something to do, something to love, and something to hope for.

Mary

Mary's "At Home"

YOU wrote last of the matchless courage of England! How we salute her! To me that grand sense of saving humour portrays a fineness of mental balance in the good old British stock. When things swing all one way the British mind counteracts by weighing down the other side. I have a memory of a bush fire long ago, and of refugee mothers and fathers, with clothes ruined and faces begrimed, who thankfully sat on kerbs and footpaths after being brought into a half-burnt-out township—and laughed and joked! They told of the funny things that had happened to them as if bush fires were ordinary, everyday affairs.

Out of the chaos of this war, Mary, thousands of brave deeds will go unsung. We may rub shoulders, later on, with the bravest of the brave, and yet not know it. But I believe the fact that such deeds were done by ordinary men and women, and children, too, will build into our race something so fine and grand and lasting that it will become part of it, and make possible the union of nations. That we, who feel humble indeed before such bravery, can contribute something to the new post-war world, I firmly believe. By really turning our neighbourliness into something real, and by looking for things to do for each other—not out of a sense of duty, but because our love for one another is growing into something worthy of those who fight for "a better world." Doesn't it remain with us to build, too, our links in the chain, strengthened by service for one another? No people on earth were ever given such chances! If only we are

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big enough to grasp them, and to keep them.—**Tiggetty Boo, Kati Kati.**

I AM writing this in a warm dressing-gown, by a cheery fire. No, I am glad to say, I am not an invalid. Just someone returned from a nine-mile tramp to town, in pouring rain. I might have ridden, had my horse been shod, but then, of course, I might have flown had I had wings! There wasn't any petrol for going by car, and I did want to go to town. Have just been going through this business of getting false teeth, and I simply had to see the dentist. Do you know these newer dentures, Mary? They're really rather good. The gum pale pink like one's own, and the teeth much more real than the old type. The price, of course, is rather good, too. But when the amount of service the teeth give is considered, the money is well spent. So I walked—up hill and down dale, met three heifers and an aged drover limping along behind a mob of sheep, saw the golden tapers of the poplars against a grey curtain of rain that would leave them an easy prey to the first breath of wind, and heard the sigh of a circular saw as it bit its way through someone's winter firewood. I did the journey in little over two hours, hurried through my call at the dentist, and was on the road again within an hour, being fortunate enough to get a lift when a few miles out. Now, after a hot bath and a cup of cocoa and a biscuit, I am as cosy as the cat. And with a great sense of having done something worth while. "You poor thing," my town acquaintances had greeted me with. Poor thing, indeed! Little did they guess how superior I felt, and how satisfied.—**Eadie, Dannevirke.**

THIS month's competition suits me well, the trouble being that musical memories are so many, sentimental, silly, sad, and glad, that I can't decide which one to scribble about. But I think we don't want to recall our sad times, rather the brighter ones, to help others as well as ourselves along the difficult road of life as we know it to-day.—**Laurel, Feilding.**

SOME of our Good Neighbours must have a lot to do while their men folk are in camp, especially if they have several small children. My small daughter is a great help, and such good company, too. One can get a lot out of life if one wants to. I enjoy living on a farm, although I was not brought up in the country. Life is never dull, there always seems some little thing that happens to brighten the way. I do enjoy your pages, Mary, they are so worthwhile, and one is always pleased to hear what our neighbours are doing in other parts of our country. —**Fussy, Riwaka.**

WE went to see my grandmother last weekend, and woke to a white frost. They live at the foot of the mountains, and it is a good place to keep away from in winter. We enjoyed the break, and my grandmother is great company. She is 87 years old now, and came out here about 67 years ago in a sailing ship. She can tell some tales! My grandfather died about four years ago, and as it was only one month off their Diamond wedding, we were all very sorry. Granny knits for her soldier boys, and for most of the great-grandchildren, and last year her great-great-granddaughter was born—grand rejoicing I can tell you. We had our old argument, old

Do good with what thou hast, or it will do thee no good. Seek not to be rich, but happy. Be rather bountiful than expensive. Neither make nor go to feasts, but let the laborious poor bless thee at home in their cottages.

—William Penn.

versus new generation, and as usual Granny had the last word. But she loves an argument, though she will not admit it, and so do I, and we always agree to disagree!

My neighbour is a real "Good Neighbour," and many a time has she lent me a helping hand. And I always say to her, "But for you, I would not still be here." She is always ready with a kindly word, or good advice, which is given in such a manner that one feels that it must be followed. Last week I had a job of sewing to do, and I got stuck, so I went down and did her ironing, while my neighbour did the sewing, and I certainly had the best part of it.—**Biddi-Jan, Redcliffs.**

YOUR recent article, "Cymru Am Byth," seemed a hearty call to join your "At Home." I love the Welsh people and their haunting songs, as I lived during my early school years in a little Welsh town, where the sight of the high Welsh hats of the national dress was by no means uncommon. The odd-looking Welsh language which may look like a "printer's error" as you put it, Mary, is really musical when rolling from the tongue of a Welshman. It is indeed a far cry from here to the other side of the globe, but we can still join in spirit with those other Welsh countrymen scattered all over the world, with the hearty cry, "Wales for ever."—**Brynmawr, Aramoho.**

ONCE again I am making toys. It is such an interesting hobby. I read once that the greatest thing in life is achievement, and I feel that in my toy-making I have achieved something. Besides those toys I told you about before, I have made tiny bunnies with long coloured ears, and also bunny rattles. You may have noticed these in the shops—a bunny's head with a long handle, and a rattle inside. Saw a quaint money-box the other day—a golliwog. The head was made from a tin and the mouth was a slot for coins. Of course, the tin was cloth covered, complete with eyes, etc. On top of the head was a piece of fur which when lifted displayed a larger hole to enable one to remove the coins. The arms, legs, and body were rather longer than usual, and a pink striped suit, complete with lapels and plain pink vest, completed the outfit.. A tiny shopping bag hung precariously from one hand.—**J. F., Otara.**

WE are having great times with a joint effort my Sunday School children are making. They're grand youngsters, and a constant joy to me. The grown-ups are clearing off the debt on the Church, and they wanted a finger in it, too, so we are making a Bible story "come alive." I gave them each a talent of threepence, and they're trading with it for a fortnight, to see how far they can increase it, by odd jobs first, and then by making and selling whatever their fingers can do.—**London Lass, Wellington.**

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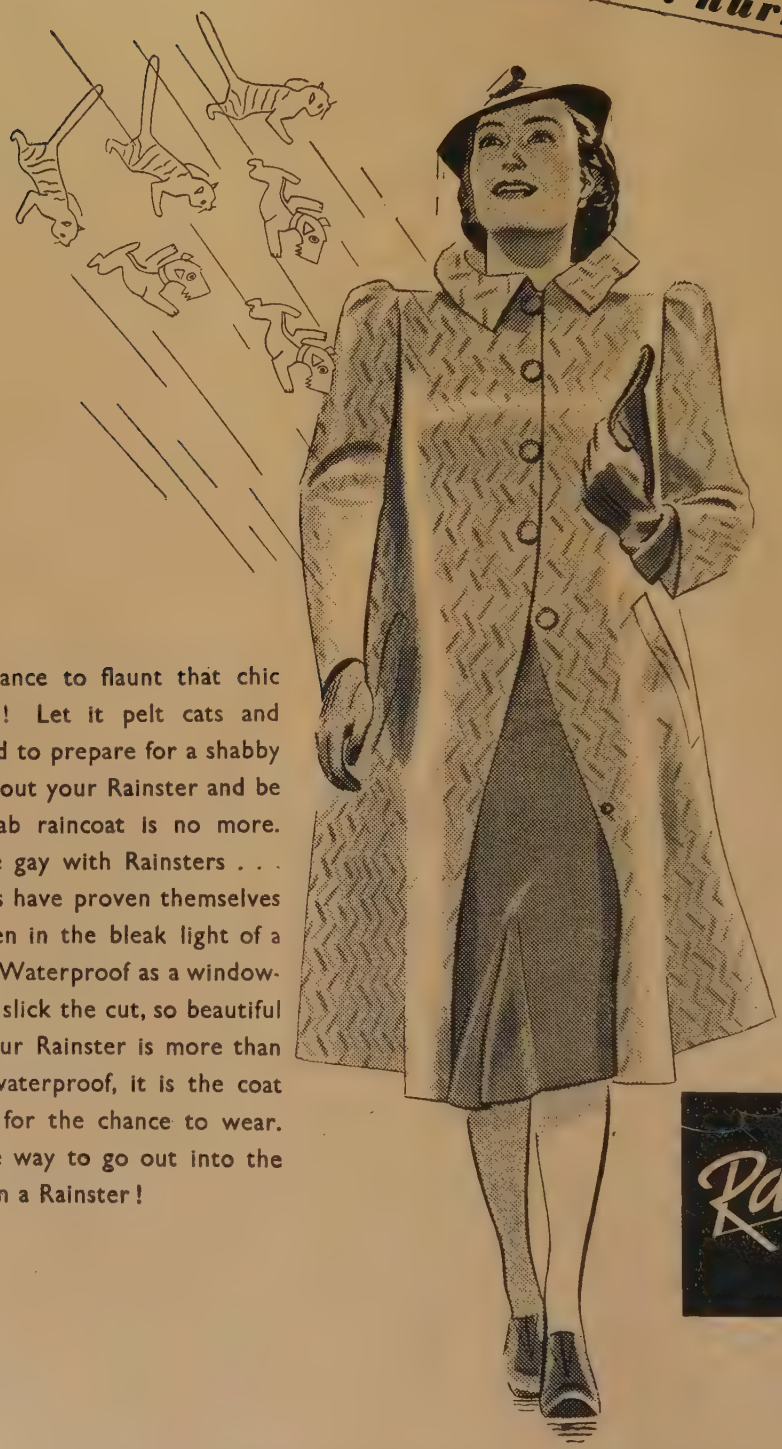
Raining cats and dogs . . . hurrah!



. . . It's a chance to flaunt that chic new Rainster! Let it pelt cats and dogs—no need to prepare for a shabby eclipse. Get out your Rainster and be gay. The drab raincoat is no more. Drab days are gay with Rainsters . . . whose colours have proven themselves becoming, even in the bleak light of a wintry day. Waterproof as a window-pane. But so slick the cut, so beautiful the fabric, your Rainster is more than an infallible waterproof, it is the coat you're eager for the chance to wear. Definitely the way to go out into the rain again is in a Rainster!

GET OUT YOUR RAINSTER AND BE GAY

Our Competition

MUSICAL MEMORIES

WHAT a popular topic this month's competition has proved to be! I have just been surrounded with musical memories, and the past has come back to me every time I have opened my mail. Most of your memories have taken us back through the years to the days of childhood, and I have found it very hard indeed to make up my mind about prize winners. But here they are for you.

First prize goes to "Faraway," of Gisborne, for her excellent entry, and because two of the others are so close, there is a prize for each of them: "Patriotic," Cambridge, and "F.D.K.," of Te Awamutu.

The poet Shelley knew what he was doing when he wrote "Music, when soft voices die, Vibrates in the memory." Music, these days, is a joy and solace to us all.

First Prize

WHAT a glorious privilege we enjoy in musical memories, to be transported to the past in the merest flash. It is like the perfume of flowers—elusive, delicate, unsurpassed. How often we hear the National Anthem. Daily and nightly come the majestic notes of the finest hymn in the world. The notes are crammed full of memories marching through the years. I always sing the bass, and to me the harmony is the grandest melody that I know. Sometimes I am a child again, and the Duke and Duchess are visiting New Zealand. My father is holding me in his arms so that I may see the Royal pair. Then there is the conclusion of the school break-up the year I was dux. Again, at my wedding, the toast, "Gentlemen, the King." My husband is in uniform. Later, he sails for France, and as the ship draws away from the wharf, the National Anthem is played, and one's throat is tight, and hurts. But it makes bearable that fatal message, "We regret to inform you," for it **means** something to die for King and Country. Nor is it for that tall grave man alone, but for our Empire, and what it represents. Sing our National Anthem as the King requests, slowly, reverently, and please God, until the end of Time. Mingle your memories, sad or gay, keeping them in your heart, for always there is the promise that "If ye ask ——it shall be granted unto you."—**Faraway, Gisborne.**

Second Equal

LISTENING this evening to Peter Dawson singing at the Wellington Town Hall "Land of Hope and Glory," my thoughts flew back to a Sunday afternoon in London, 1919, when I went to a big concert at Albert Hall. Clara Butt was the principal artist, and her husband Kennerly Rumford also sang, but I can remember none of the artists except Clara Butt as she sang "Land of Hope and Glory," the massed bands, in their gorgeous uniforms accompanying her. She had a wonderful stage presence, and wore a perfectly plain cream satin frock, so rich, and sweeping from the back, with a beautiful train of Royal blue satin, and holding a bouquet of crimson roses. Sing! We never sang like it before! The audience rose from their seats, waved their programmes. What a reception—what a personality. I never hear "Land of Hope and Glory" now but I think of that afternoon, and the way in which that audience was swayed.—**Patriotic, Cambridge.**

Second Equal

I HAVE a number of musical memories, but the one which remains the most vivid in my mind concerns an occasion a number of years ago in Dunedin. I had been chosen by my singing master to assist him in a course of lectures he was giving on "Appreciation of Music." The lectures were held in a room which had a glass roof, and on the night in question Schubert was the composer under discussion. I had just begun the one song of the evening of which I felt nervous, "The Young Nun," when, without warning, a sudden storm arose, thunder rolled, lightning flashed, and great oak trees in the courtyard shook in the gale. Any readers familiar with the words of Schubert's wonderful song will understand what I am leading up to. The young nun compares her previous life to a house rocked and beaten by the storm. Then she embraces the Church, the storm dies down, and all is peace. At the very moment when the spirit of the song changed, the storm outside died down. It was most thrilling, and to me an amazing experience, and one which I shall never forget. In a song which I had always attacked with trepidation, I was for once carried away, and my teacher said I had never sung better.—**F.K.D., Te Awamutu.**

MUSIC has that lasting quality which gives us treasures to store for ever and ever, and it becomes such a part of us that each stage of our life brings forth its own lasting memory. There are the never-to-be-forgotten nursery rhymes, the rollicking school songs, and I smile over the adolescent stage, for the sentimental songs have their place also—"Drink to Me Only With Thine Eyes" and "The Sunshine of Your Smile." Gone are the days of good old sing-songs round a friendly piano, but they have left memories of

A Problem to Solve

MY mail has brought me a problem to solve, and I think you are the ones to solve it. I am printing the letter below —will you write and tell me what you think should be done? The problem is a vital and serious one—let us have your views.

"I have a son, aged 23, away on a dairy farm, where he has little or no opportunity of meeting any desirable young ladies. Once in a while he certainly may go to a dance, but meetings there hardly give him time to get acquainted, especially as the right type of person is perhaps somewhat reserved. I suppose nearly all sons are desirable in the eyes of their parents, and I must confess that I hate to think that my boy (who has such a likeable and kindly nature, and is so suited by physical build and education to be the progenitor of his kind) might be left to swell the ranks of farming bachelors, because of the lack of suitable facilities for meeting those of the opposite sex.

"Although I do not suggest that your columns should become a matrimonial agency, could not something be done by way of inviting correspondence from farmers' daughters, and also from young farming men, who might be put in touch one with another through correspondence? During my life I have met no end of elderly farmer bachelors who have remained single because of the lack of opportunities afforded them of meeting their mate."

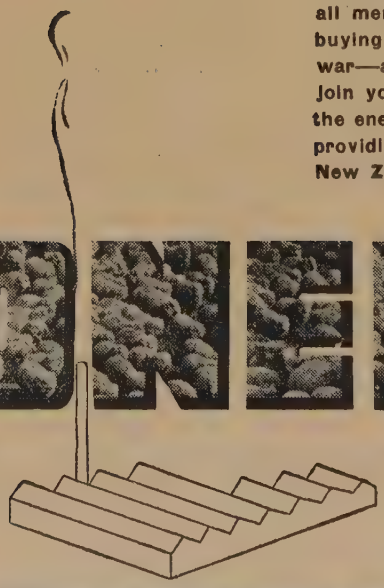
The competition closes on July 20th, and there are two prizes: First 10/-, and second 5/-.

Send your entry to—

"MARY,"
C/o "Journal of Agriculture,"
P.O. Box 3004,
Wellington.

WHEN THE DAWN COMES UP LIKE THUNDER . . . .

In the Tropics, too, the chill of dawn strikes at weary bones . . and Onehunga blankets are appreciated for their fine quality by all members of the fighting forces. If you have any difficulty in buying blankets remember the Onehunga mills are weaving for war—and that the needs of the forces come first. However, we join you in the hope that soon a peaceful dawn will break, and the energies of the Onehunga mills will once more be confined to providing blankets for "active service" only in the homes of New Zealanders.



ONEHUNGA Blankets

ONEHUNGA TRAVEL RUGS * AIR CELL BLANKETS * ONEHUNGA WOOLLENS

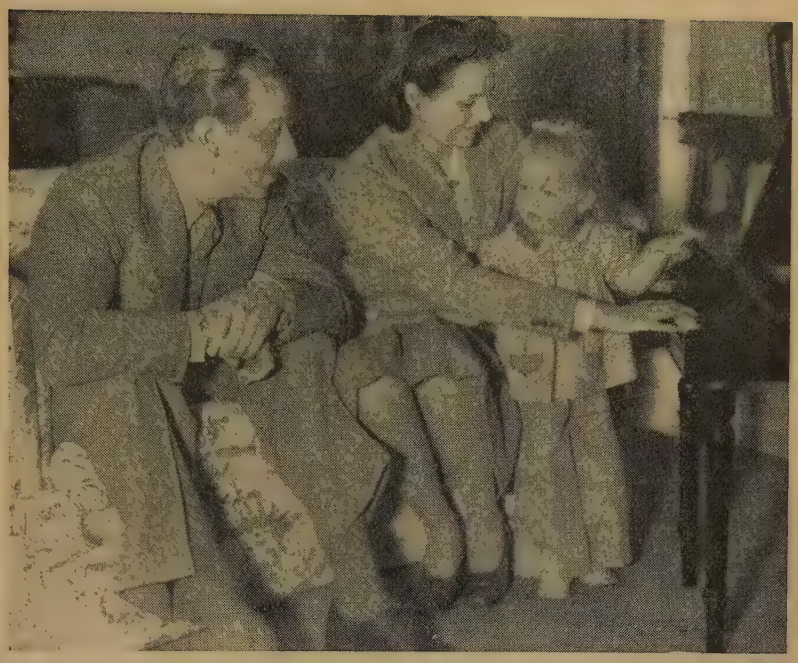
a happy family band, jolly together in musical comradeship, and joined with the love of our mother, of whom I always love to sing that melody, "Mother Machree." Every sorrow or care in the dear days gone by was made bright by the light of that smile in my mother's eye. It is mostly our mothers who bless us with our musical memories, and we have much to thank them for.—**Roundabout, King Country.**

HOW many of you remember the songs of the last war, "Roses of Picardy," "There's a Long, Long Trail A-Winding," and many others all so poignantly alive with the tragedy and bravery of those 1914-18 years? I so clearly remember the good old sing-songs we had round the piano when the boys returned home—there was a warmth and friendliness about that music that no radio could ever reproduce. I was too young to have been emotionally involved during that war, but I sensed the strain and restlessness of our men as they readjusted their lives to "civvies" again. "Roses of Picardy" in particular still has the power to bring back those chaotic days. And now, here we are all over again, tasting "strange heaven in unbelievable hell." May each woman draining the cup of loneliness and misery be sustained by the thought that through the sacrifice of herself, and others, too, good will finally prevail against evil.—**Alleyne, Wellington.**

THE music with which that Pied Piper, Memory, lures me into the past, is here among my records. I play Beethoven's "Moonlight Sonata," and I am a child, not yet under music's spell. To my bereaved home have come many mourners, and among them one, who, taking me apart and drying my tears, has begun to play, softly, the "Moonlight Sonata." And I know peace and wonder and a passionate gratitude, as I do now. All Scots have memories which the playing of the pipes revive. My most precious one is of crossing to Skye by moonlight on a September night fifteen years ago; our sailing boat, accompanied by another, from which came the songs of the isles, with unearthly beauty. To the strains of this waltz, I said "Yes." So, you see, thanks to music and the means of reproducing it, I live again, at will, my most precious moments.—**Eadie, Dannevirke.**

MUSIC—the most beautiful of all the arts. The first concert I ever attended is always brought to mind when I hear Schubert's "Serenade." Although I was a small child ,and recollect laughing heartily at the comedian's antics, it was the tender melody by that poetical musician that thrilled me most. Parts of it ran through my mind for months, and how shocked was my childish Band-of-Hope mind when I learned that this lovely tone-poem was written by a lazy Schubert on the back of a grubby menu card in a Viennese "bier-garten." Another memory—shared, I am sure, by thousands—is instantly called to mind on hearing the song "Home, Sweet Home." A jolly time being spent in a friend's drawing-room, and suddenly someone said "Listen!" What a solemn hush fell when the radio announcer told us that Dame Nellie Melba had just passed away. Her favourite record (of her own singing), "Home, Sweet Home," was then heard, and no one could speak for some time. But her earthly home was not the happiest, and one felt that at last she was home, sweet home.—**Cecily, Southland.**

WHAT memories it brings to me to hear "Beautiful Isle of Somewhere." It is some years now since the rendering of this beautiful song brought much solace and hope to me. I had very recently been bereaved by the loss of a lovely daughter, just after she had celebrated her twenty-first birthday. Friends had been so kind, and some had stayed in the house with me for a few days, but as soon as I was alone, my sorrow knew no bounds. I turned on the radio—what a glorious treat was in store for me, for almost immediately Richard Crooks sang "Beautiful Isle of Somewhere." Somehow or other, listening to that song, I felt a peace and comfort steal into my heart that a few hours before I had thought I should never know again. Ever after all these years I never hear that song but I feel a new strength in me, a new hope, and there may be another mother somewhere who, were she to listen to this song, may reap this same comfort.—**Just Mother, Auckland.**



Musical memories—it seems that with most of you it is the "Songs My Mother Taught Me" that remain as the sweetest memories down through the years. Here we have Helene, the baby daughter of the Columbia star, Melvyn Douglas, at the piano with her parents.

Competition for July

MANY of our "Good Neighbours" seem to be experiencing some difficulty in getting their competition entries in on time—mails are so often delayed now, and time is short. So I have decided to let you know about the competition a month ahead, and that will give you plenty of time to send in your entries.

So here is the competition that closes on AUGUST 15th. Will you let us share the most amusing incident in your life? Humorous things happen to us all, and there is no tonic as good as a hearty laugh. So let us laugh with you.

"THE MOST AMUSING INCIDENT IN MY LIFE."

The first prize is 10/-, and the second 5/-. Let me have your entries by AUGUST 15th, please.

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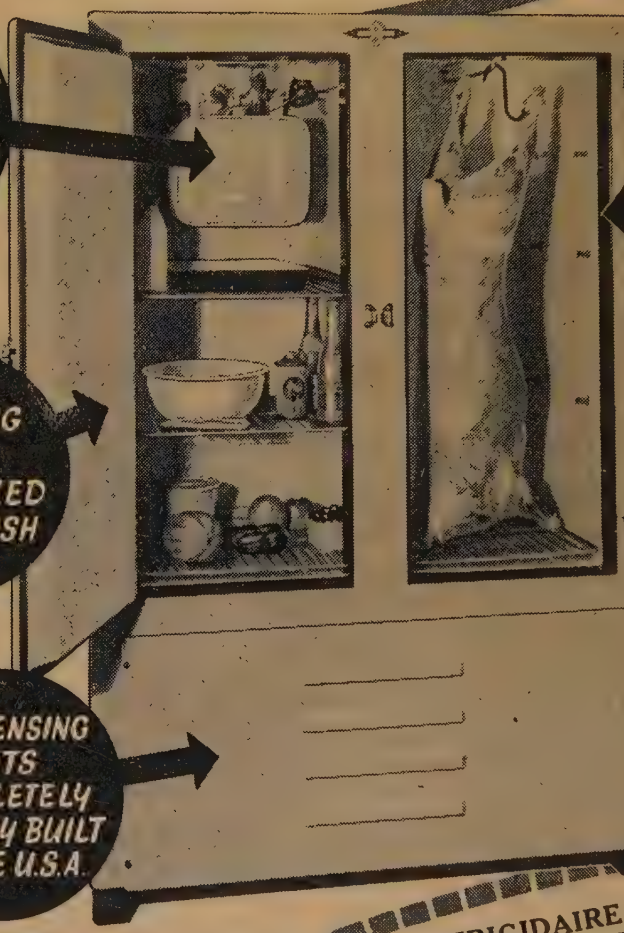

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. . . How Does Your Garden Grow?

EVEN in the winter months, Mr. Hyde still has plenty of advice to offer so that you will be kept busy in your garden when the weather is fine enough. And for a wet day he has a suggestion too!

TO be successful in the garden, one must keep step with nature, and carry out all operations in harmony and good will. The season for each operation quickly passes, and unless one has well thought out plans, enabling easy and prompt execution, the chance is missed or fumbled. The laying out of new gardens particularly comes under this heading. Well proportioned with simple outline; levels which dispose of surface water satisfactorily and facilitate maintenance; with planting, suited to the environment, makes of a dwelling a home that is a dignified reality and a pleasant memory. This work may be done now, when the land is dry enough to be friable, with a view to completion during the month of September.

Alterations and repairs in the home flower garden include cutting new beds and borders and turfing down old ones. Adjusting grades, as in the case of subsidence, by peeling off the turf, adjusting the soil level and relaying

They are never alone that are accompanied with noble thoughts.
—Sir Philip Sydney.

the turf; neatly patching worn edges of lawns, or spots worn by traffic, or the removal of a tree, etc. Considerable transformation may be done in this way with little trouble and many defects adjusted. Perennial herbaceous borders requiring a periodical cleaning and reconditioning may be dealt with now in warm districts and next month elsewhere.

When the plants have been systematically moved to spare ground, as in the vegetable garden, the border should be thoroughly trenched and cleaned of all serious weeds, working in a good dressing of manures, and allowing time for weed seeds to germinate and be destroyed, and the land to settle before replanting.

New Shrubs

It is advisable to take delivery from the nurseryman now of any trees and shrubs that are to be planted. If they have travelled far see they get prompt attention, as drought and exposure are inimical. Unpack them as soon as they are received, and give the plants air and water as required. If conditions do not then permit you to plant out at once, heel in the plants in spare ground, and they will be quite safe until you have a suitable opportunity later in the season.

Whether planting is done now or later, it is important the roots should not be exposed to the air, but covered with a wet sack after lifting until they are planted. In doing this trim back broken and straggling roots, then thin out the main branches so that there is ample room to develop strong forks or trunk, and then plant in a hole of ample size, filled with fine soil, and thoroughly firmed by tramping.

Depth should be carefully regulated to coincide with that at which the plant grew in the nursery. The branches should then be cut back to about one-third to one-half their length, just beyond a good bud pointing outward. This work can only be done when the land is sufficiently dry to be friable. In poor or light land a generous dressing of organic manure well below the present reach of the roots and a handful of blood and bone manure when the hole is half filled will be of benefit to trees and shrubs of most kinds. Hybrids expected to bloom heavily each season will derive benefit from such treatment in any circumstances.

Seeds for Flower Gardens

Seeds for the home flower garden for the coming season should now be considered. Hardies and half-hardies; tall, dwarf, and climbers for spring sowing; perennials and biennials for sowing in summer and hardy annuals for autumn sowing should each receive consideration. The one-season display of these annuals affords opportunities of an infinite variety in even a small garden. Not too much variety at one time, but from year to year. Areas in the foreground of shrubberies, especially those newly planted, and in odd corners, rough and dry, antirrhinums, calendulas, Virginian stock, mignonette, nasturtiums, etc., bravely face rough winds and circumstances with little encouragement.

A supply of farm manure should be composted to reduce it to a decayed friable state for herbaceous plants:

What To Do During July.

Summary:

Carry on with laying out of new gardens; and alterations, additions and repairs to old ones.

Plant trees and shrubs after careful selection and well planned arrangement.

Give consideration to seeds, tools and other supplies for the garden.

with bonedust, blood and bone, wood ashes, and soot which has been stored for a few months, one will then be in a position to get results even during the shortage of artificial fertilisers.

Overhauling the tools is a useful winter-day job, especially when one has a special set for the flower garden. If kept clean and sharp, and shafts smooth, and polished with boiled linseed oil, work is a pleasure for yourself and anyone whom you may enlist.

—WM. C. HYDE, Horticulturist, Wellington.

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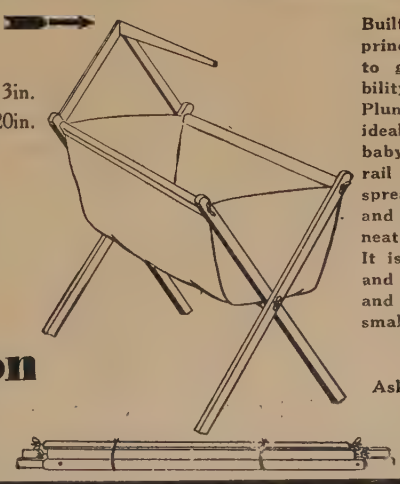

Built on a new principle, designed to give better stability, the "Alexto" Plunket Cot is the ideal cot for your baby. The curtain rail gives a better spread of curtain, and the whole cot is neat and attractive. It is easier to erect and packs up neatly and quickly into a small space.

Ask your nearest Stockist for "ALEXTO" goods.

I Paint on Brooches

IT is amazing, the faith of our acquaintances in the ability of their apparently more gifted friends, especially in the realms of art.

To one whose hobby is painting scenes on brooches, the unbounded confidence of the requests which come are in turn highly flattering, amusing, and embarrassing. There was the lady who sent a snap of her pet bulldog, together with a cutting of his hair to help in the colour scheme. But an afternoon's effort produced something looking more like a fierce gorilla than a handsome bulldog—it was impossible to imagine any lady willing to wear it as a decoration, so polite regrets were sent back to her with the snap. Back came an urgent demand for the return of the lock of hair, but unfortunately it had gone astray, its value being entirely unappreciated!

Another lady wanted her dog painted, but this one was a hero, having been drowned while saving a child's life. Hard to refuse to do this, so an attempt was made, with hopes of inspiration. The result was satisfactory to the owner of the dog—but then an admirer of that brooch brought along a snap of his wife and daughter—could they be painted? This was too much, and a firm and prompt refusal was the reply to that request.

In the hum of the market there is money, but under the cherry tree there is rest.

—Japanese saying.

All that a homesick Scot wanted was a thistle tied with a tartan ribbon, a modest order after some of the others!

And I wondered for a long time what was behind the order from a young man who wanted a solitary green gooseberry painted on a brooch. Probably a gentle hint for the extra girl friend! A lady who sent along a postcard view of her home town was hard to please, for when the view was reduced to brooch size, she declared that the houses were not distanced correctly, for they were so many chains from the shore! Another customer was more resourceful, and suggested the use of a magnifying glass to find the road.

To one of my friends who was blind I sent an especially pretty flower brooch, and she delighted to hear a description of the flowers and their colourings. Imagine her dismay when her brooch was stolen by a servant girl when she left her employ.

It is fun, painting brooches, and work when it is a hobby too, is always a pleasure. But I am wondering if I would be justified in calling myself an artist when the next census is taken—after all, it is my occupation.

—L.T., Christchurch.

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TO-DAY

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Mary's Mixing Bowl

Potato Dishes

THE prize of 2/6 for the best potato recipe is awarded to "Margaret B," Te Kauwhata, for the following entry:—

POTATO SOUFFLE.

Three cups hot mashed potatoes, 2 tablespoons butter, 1 tablespoon salt, a few grains cayenne pepper, 1 teaspoon chopped parsley, 1 teaspoon onion juice, 3 egg yolks and 3 egg whites.

Mix potatoes, butter, salt, cayenne, parsley and onion juice together, add beaten yolks. Mix well, then fold in stiffly beaten whites. Put in a greased baking dish, set in a pan of water and bake in a moderate oven about 1 hour. Serve at once. — **"Margaret B.," Te Kauwhata.**

POTATO AND EGG BASKETS.

Take cold mashed potatoes and mix in a little grated cheese, pepper and salt. Roll into balls, then with a spoon make a hollow and form into basket. Into each basket break an egg and bake in oven.—**"Fussy," Riwaka.**

STUFFED POTATO TIMBALES.

Rub 1 lb. of cooked potatoes through a wire sieve; melt one tablespoon of butter in a saucepan and add the potato and yolk of one egg, pepper and salt. Stir over fire till thoroughly mixed. Well grease some deep patty pans or little pie dishes and line thickly with the potato mixture. Fry a little cold cooked rice in butter, adding a flavouring of either curry and onions or Worcester sauce. Fill the patty pans and cover with a crust of the potato mixture. Rub a little melted butter on the top of each, bake in the oven till brown. Serve hot with gravy or hot onion sauce. Minced cooked meat may be used in place of the rice. —**"Kookie."**

POTATO PANCAKES.

4 large potatoes, 1 level teaspoon salt, 1 small half-cup of flour, 1 egg. **Method:** Grate potatoes, add egg and beat in with fork. Lastly add sifted flour and salt. Mix well and fry in spoonfuls in frying pan of boiling fat. —**"Polly," Lumsden.**

POTATO CONES.

Take two cupfuls of mashed potatoes, add to them a well beaten egg and two tablespoons of parboiled or chopped onions, with pepper and salt. Form into neat pyramids, and place on greased tin. Sprinkle well with grated cheese, and bake until brown. Make white sauce, and pour round pyramids. Garnish with parsley. — **"F.A.C.," Hamilton.**

POTATO AND CHEESE CROQUETTES.

Take one good cup of cooked mashed potatoes, add ¾ cup grated cheese, ½ cup Weetbix (or such like) crumbs, two beaten egg yolks and seasoning in the form of salt and pepper to taste,

Your Favourite Recipe

EACH month a cash prize of 2/6 is awarded to the best recipe sent to the "Mixing Bowl." Entries for this month's competition close on July 20th, 1942.

Delicous Creamy
CUSTARD

Serve plenty of Edmonds Custard—Hot, with steamed puddings and cooked fruits, on these chilly days. Edmonds Custard makes the dish go further, and adds to its nourishment. So easy to make, and so delicious, too!

EDMONDS

'Sure-to-Please' CUSTARD in SIX Flavours

Makers also of Edmonds "Sure-to-Rise" Baking Powder, and Edmonds ACTO Baking Powder.

also 1 teaspoon Worcestershire sauce. Form into croquettes, and make a depression in the top of each. Dip in beaten egg then in fine crumbs, fry in deep fat until golden brown. Place currant jelly in the depression of croquettes and serve at once.—"**Round About,**" **K.C.**

POTATO CHEESE PUFFS.

One cup mashed potatoes, ½ cup flour, 1 egg, 1 teaspoon baking powder, ¾ cup grated cheese, ½ teacup milk, salt and pepper to taste. Beat egg and other ingredients and stir thoroughly. Drop by teaspoonfuls into smoking fat and fry a golden brown.—"**J.F.,**" **Auckland.**

MOCK WHITE BAIT FRITTERS.

Make a batter and to it add grated raw potato and a little chopped parsley and seasoning; cook the usual way in very hot fat. For two servings 1 good sized potato and batter made of 1 egg, little milk and 2 heaped tablespoons flour is sufficient.—"**Blue Bell,**" **Temuka.**

POTATO FRITTERS.

Save some leftover mashed potatoes. Put 1 tablespoon flour or cornflour, 1 egg, 1 small teaspoon baking powder, in bowl and mix well, then add the pototoes with a few chopped chives or tomatoes. Mix all well together and drop in spoonfuls into boiling fat, turn when a nice golden brown. This makes a very tasty tea dish served with cold meat. I often try some of your recipes on the Mixing Bowl page and find them very nice.—"**Janette,**" **Glenavy.**

WHOLEMEAL HONEY NUT LOAF.

One cup wholemeal flour, ½ cup honey, ½ cup chopped walnuts, ½ cup raisins or sultanas, ¼ cup milk, 1 egg beaten, 1 tablespoon butter.

Cream butter and honey, add egg, and beat well. Add milk and flour, then fruit and nuts. Bake in greased and floured nut-loaf tin in a moderate oven.

BRAIN CUTLETS.

Soak three sets of brains in strong salt water for an hour; drain and skin, put on stove in fresh cold water, bring to boil, strain, and chop finely. Add 1 breakfastcup breadcrumbs, 1 dessertspoon finely chopped parsley, a little grated lemon-rind, salt and pepper to taste. Mix all together with a beaten egg. Drop tablespoons in boiling fat, and fry with a few rashers of bacon.

YORKSHIRE TREACLE TART.

Line a shallow piedish or plate with short pastry, then put in the following, well mixed: One cup dry breadcrumbs, 1 cup mixed fruit (currants, sultanas, candied peel, etc.), grated rind and juice of 1 large lemon, 1 cooking apple (grated), ¼ teaspoon ground ginger and cinnamon, 2 tablespoons treacle, 2 tablespoons milk. Cover with pastry and bake about half an hour.

NEST OF EGGS.

1 lb. potatoes, knob of margarine, salt and pepper, little milk, 2 oz. grated cheese, 2 eggs.

Cook the potatoes until quite soft, then mash them thoroughly, adding a knob of margarine and enough milk to make to a creamy consistency. Add grated cheese, and season well with salt and pepper. Spread the potato puree thickly in a greased fireproof dish, hollowing out two "nests" for the eggs. Bake in a moderate oven for 15/20 minutes, until the potato begins to brown, then break the eggs and place them in the nests. Return to oven, and continue cooking until the eggs are set sufficiently to suit individual tastes. Garnish with parsley, and serve very hot. If liked a little cheese and breadcrumbs may be sprinkled on top of the eggs after baking, and the dish lightly browned under the grill.

HONEY AND CINNAMON BISCUITS.

4 oz. fine oatmeal, 4 oz. wholemeal flour, 2 oz. dripping, pinch salt, ½ teaspoon cream of tartar, 1-8 teaspoon baking soda, 1 tablespoon honey, little milk, ¼ teaspoon cinnamon.

Mix the two kinds of meal, and rub in the fat. Add the other dry ingredients, and mix thoroughly. Melt the honey, and mix with 2 tablespoons milk. Mix the dry ingredients to a stiff dough with the honey, and milk, adding extra milk if necessary. Knead lightly, and roll out about ¼ inch thick. Prick, and cut in squares or rounds with a 3-inch cutter. Bake in a moderate oven for 15/20 minutes, until lightly browned.

LEMON SAGO SHAPE.

3 oz. sago, 1 lemon rind, 2 tablespoons sugar, 1 pint water, 2 tablespoons golden syrup.

Put sago and water in saucepan, and leave soaking for 2 hours, with the grated lemon rind in it. Then boil for a few minutes, until thick. Take off, and add syrup and sugar. Put in mould, and serve with custard sauce.

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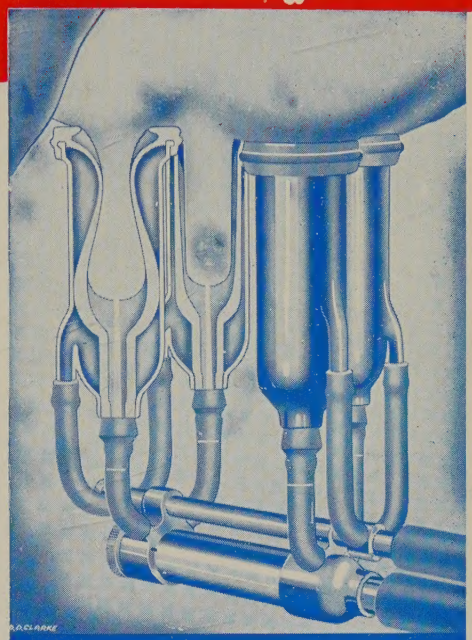

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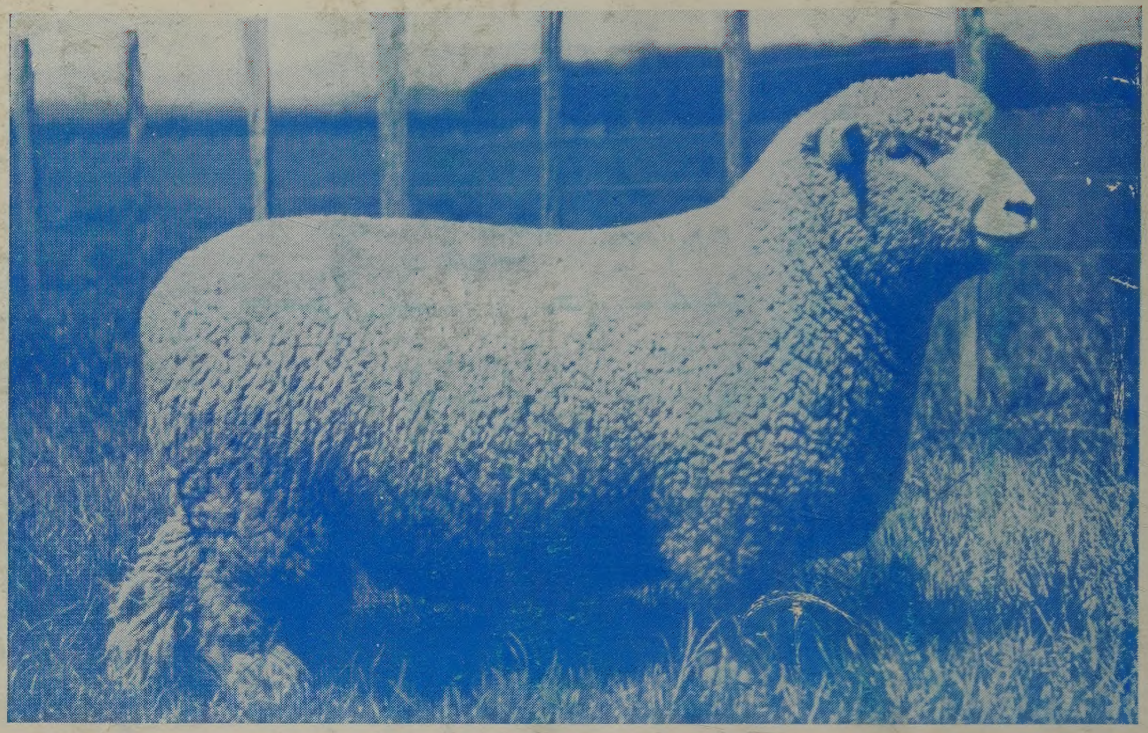

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